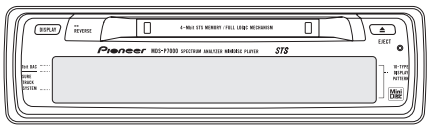
Service Manual



ORDER NO.
CRT2382

SPECTRUM ANALYZER MD PLAYER

MDS-P7000

UC

NOTE:

● **US and foreign patents licensed from Dolby Laboratories Licensing Corporation.**

CONTENTS

1. SAFETY INFORMATION 2
2. EXPLODED VIEWS AND PARTS LIST 2
3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM ...10
4. PCB CONNECTION DIAGRAM 24
5. ELECTRICAL PARTS LIST 34
6. ADJUSTMENT.....39
7. GENERAL INFORMATION 40
   7.1 DIAGNOSIS 40
      7.1.1 TEST MODE 40
      7.1.2 DISASSEMBLY 61
   7.2 PARTS 63
      7.2.1 IC.....63
      7.2.2 DISPLAY 70
8. OPERATIONS AND SPECIFICATIONS.....71

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153-8654, Japan
PIONEER ELECTRONICS SERVICE INC. P.O.Box 1760, Long Beach, CA 90801-1760 U.S.A.
PIONEER ELECTRONIC [EUROPE] N.V. Haven 1087 Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS ASIACENTRE PTE.LTD. 253 Alexandra Road, #04-01, Singapore 159936

© PIONEER ELECTRONIC CORPORATION 1999

K-ZZS MAR.1999 Printed in Japan

1. SAFETY INFORMATION

CAUTION

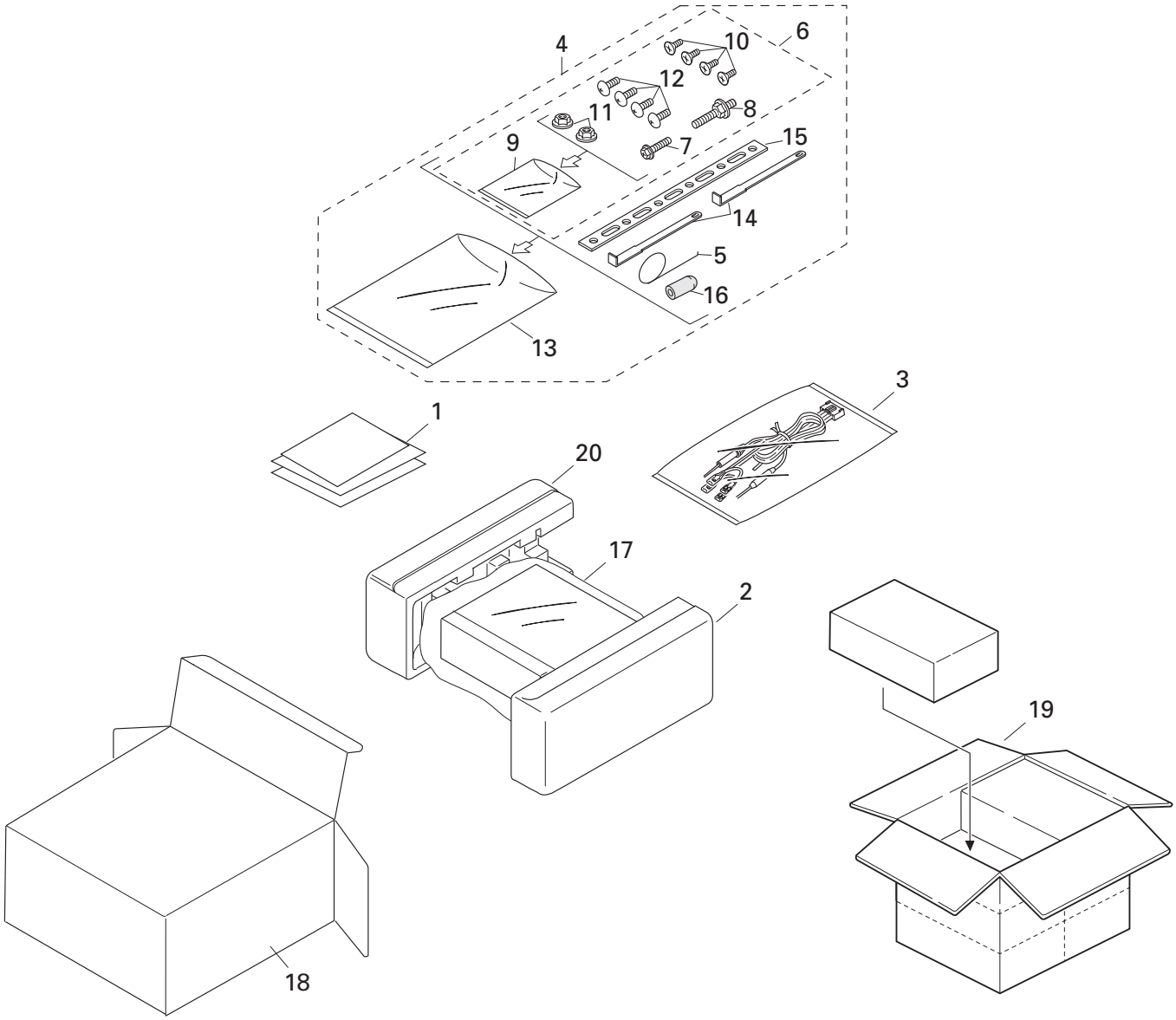
This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer.
Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty.
If you are not qualified to perform the repair of this product properly and safely; you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

This product contains lead in solder and certain electrical parts contain chemicals which are known to the state of California to cause cancer, birth defects or other reproductive harm.
Health & Safety Code Section 25249.6 - Proposition 65

2. EXPLODED VIEWS AND PARTS LIST

2.1 PACKING



NOTE:

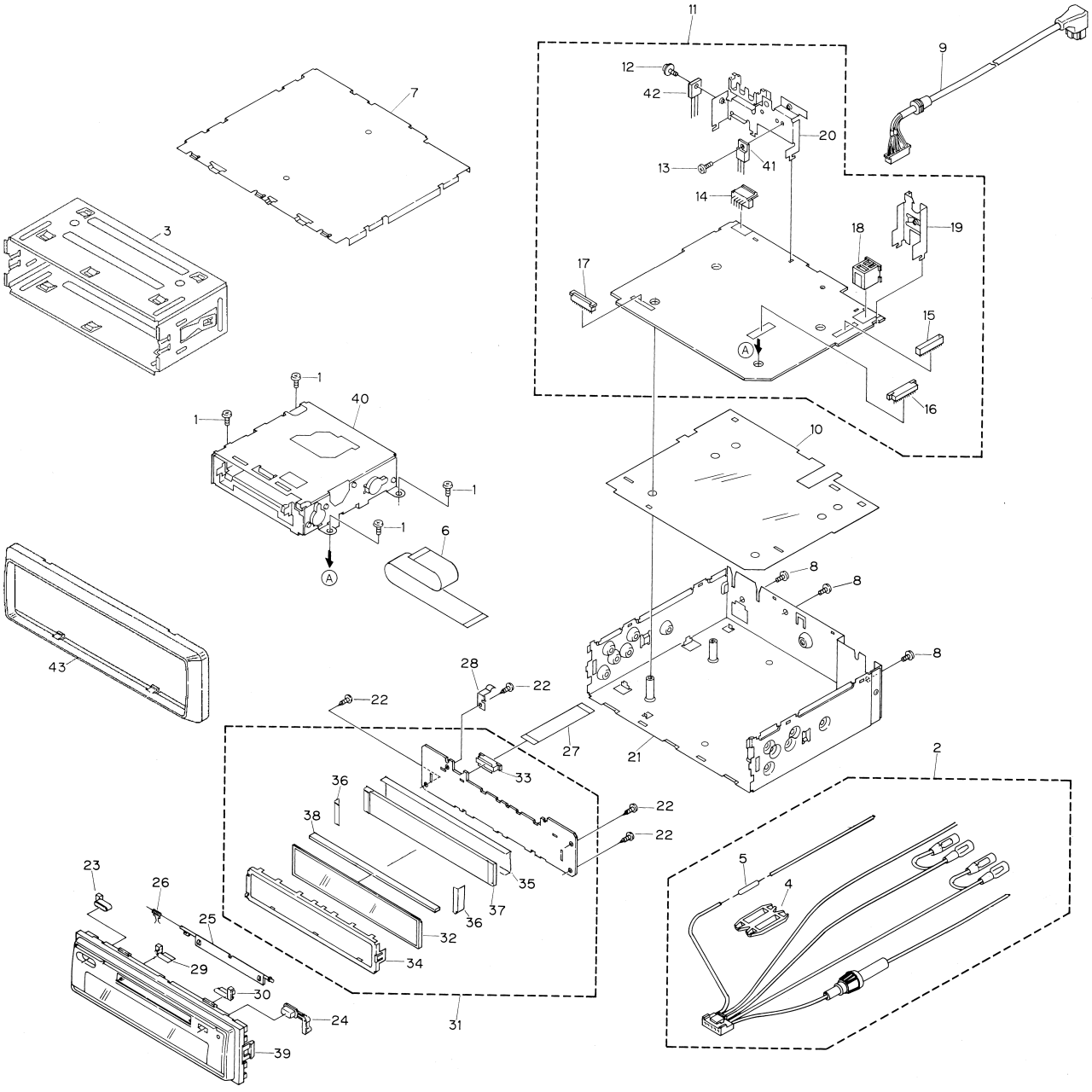
● Parts marked by "*" are generally unavailable because they are not in our Master Spare Parts List.

● Screws adjacent to ∇ mark on the product are used for disassembly.

● PACKING SECTION PARTS LIST

Mark	No.	Description	Part No.
*	1-1	Card	ARY1048
	1-2	Owner's Manual (English)	CRB1547
	1-3	Installation Manual (English)	CRB1548
	2	Protector	CHP2175
	3	Cord Assy	CDE6036
	4	Accessory Assy	CEA1918
	5	Spring	CBH-865
	6	Screw Assy	CEA1924
	7	Screw	CBA-102
	8	Screw	CBA1284
*	9	Polyethylene Sheet	CNM4338
	10	Screw	CRZ50P090FMC
	11	Nut	NF50FMC
	12	Screw	TRZ50P080FMC
*	13	Polyethylene Bag	CEG-158
	14	Handle	CNC5395
	15	Strap	CNF-111
	16	Bush	CNV1009
	17	Polyethylene Bag	CEG1173
	18	Carton	CHG3809
	19	Contain Box	CHL3809
	20	Protector	CHP2174

2.2 EXTERIOR

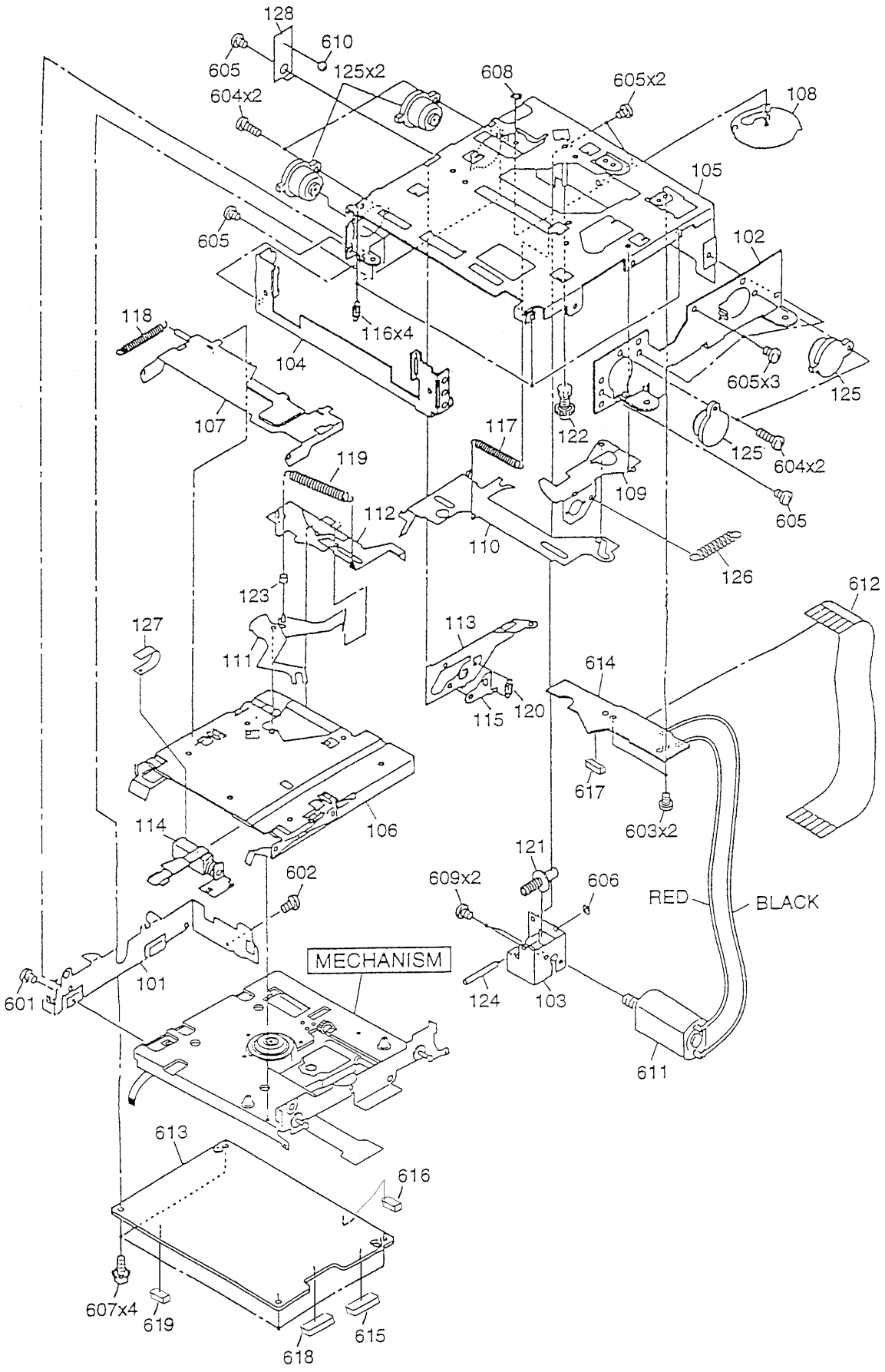

11
9
12
42
20
13
41
14
18
19
17
15
16
7
3
1
40
10
6
8
43
28
22
27
21
2
33
36
38
35
37
32
34
23
26
25
29
30
24
39
31
5
4

● EXTERIOR SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	Screw	BSZ26P050FMC
	2	Cord Assy	CDE6036
	3	Holder	CNC6798
	4	Cap	CNS1472
	5	Resistor	RS1/2P102JL
	6	Connector	CDE5449
	7	Case	CNB2104
	8	Screw	BSZ30P060FMC
	9	Cord Assy	CDE6037
	10	Insulator	CNM5027
	11	Audio Control Unit	CWM6669
	12	Screw	ASZ26P080FMC
	13	Screw	BSZ26P080FMC
	14	Plug(CN801)	CKS-462
	15	Plug(CN351)	CKS1044
*	16	Connector(CN201)	CKS2221
	17	Connector(CN601)	CKS2243
	18	Connector(CN352)	CKS3410
	19	Holder	CNC6834
	20	Holder	CNC7254
	21	Chassis Unit	CXB4295
	22	Screw	BPZ20P060FMC
	23	Button(DISPLAY)	CAC6158
	24	Button(EJECT)	CAC6129
	25	Door	CAT1839
	26	Spring	CBH1953
	27	Connector	CDE5262
	28	Holder	CNC8297
	29	Lighting Conductor	CNV5767
	30	Lighting Conductor	CNV5768

Mark	No.	Description	Part No.
	31	Keyboard Unit	CWM6451
	32	LCD(LCD901)	CAW1534
	33	Connector(CN901)	CKS2762
	34	Holder	CNC8452
	35	Sheet	CNM6181
	36	Sheet	CNM6189
	37	Lighting Conductor	CNV5728
	38	Connector	CNV5732
	39	Grille Unit	CXB4233
	40	MD Mechanism Module	CXB3584
	41	Transistor(Q201)	2SD2396
	42	Transistor(Q854)	2SD1189
	43	Panel	CNS5148

2.3 MD MECHANISM MODULE(1)

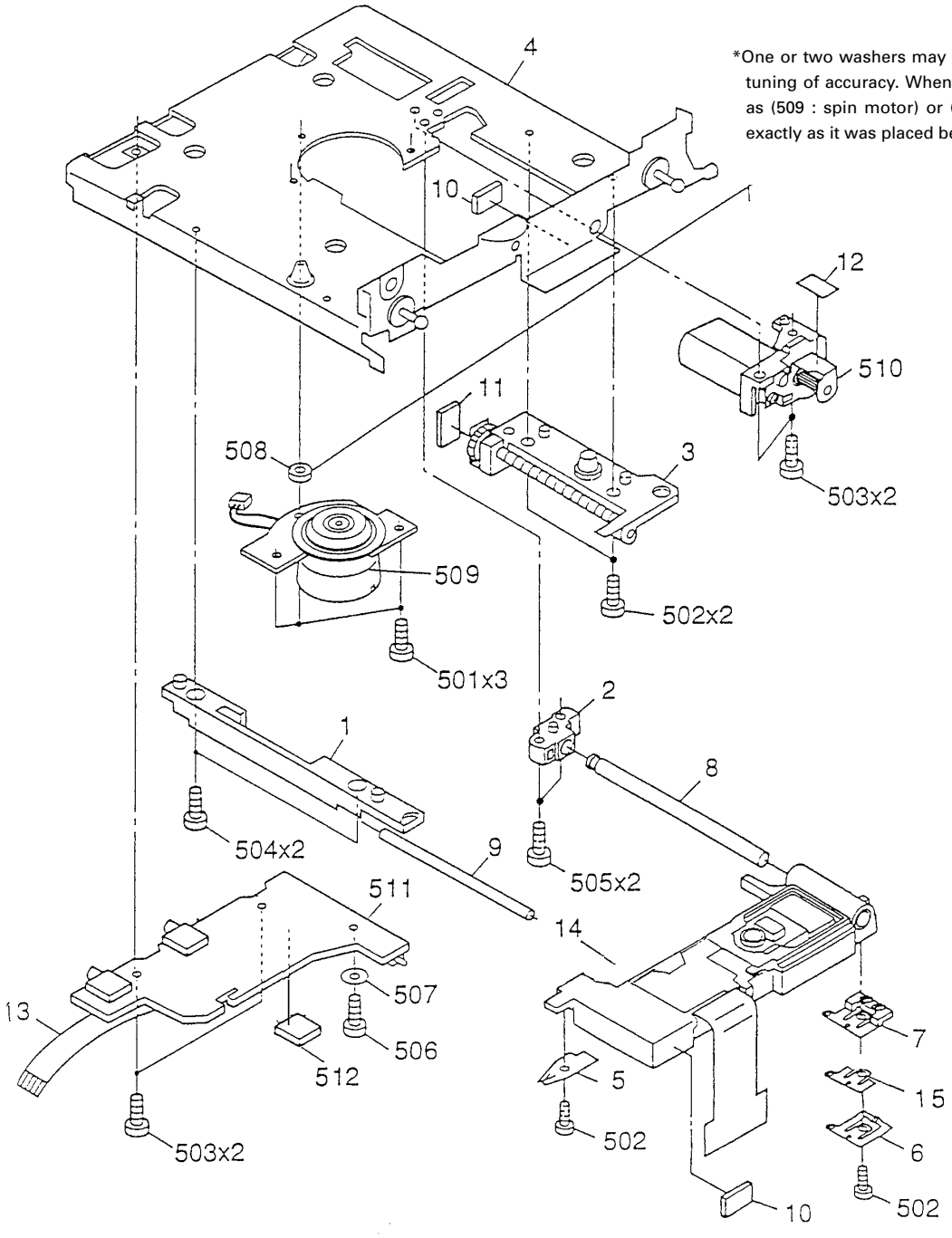


● MD MECHANISM MODULE(1) SECTION PARTS LIST

Mark No.	Description	Part No.
1-100	•••••	
101	Side Plate Assy, Left	1242000186
102	Side Bracket	1242000188
103	Loading Motor Bracket	1242000189
104	Front Guide	1242000190
105	Loading Chassis Assy	1242070066
106	Disc Holder Assy	1242140176
107	Disc Holder Arm	1242400018
108	Mode Gear	1242410003
109	FLT Lock Arm	1242480151
110	FLT Lock Plate	1242480112
111	Clamper Arm	1242480114
112	Loading Plate	1242480105
113	Mode Plate	1242480107
114	Catch Block	1242480108
115	Lift Arm	1242500001
116	Spring, Damper	1242580146
117	Spring, FLT Lock	1242580147
118	Spring, Disk Holder	1242580148
119	Spring, Clamper Arm	1242580149
120	Spring, Lift Arm	1242580150
121	Gear, Worm Wheel	1242810060
122	Gear, Pinion	1242810061
123	Roller, Clamper Arm	1242870012
124	Shaft, Worm Wheel	1242900093
125	Oil Damper	1243300001
126	Spring, FLT Lock Arm	1242580204
127	Spring, Slider	1242580201
128	Spring, Mode Plate	1242580202
129-600	•••••	

Mark No.	Description	Part No.
601	Screw,1.7X1.6MM	1249700045
602	Screw,1.7X2.5MM	1249700040
603	Screw,2.0X3.0MM	1249700133
604	Screw,2.0X3.5MM	1249700134
605	Screw,2.0X2.2MM	1249700135
606	Washer,1.2X3X0.2MM	1249900021
607	Screw,2.0X4.0MM	1249700140
608	Washer	YE15FUC
609	Screw,2.0X2.5MM	1249700158
610	Ball	CNR1189
611	Loading Motor(M651)	1246300043
612	Flat Cable, 8 Pin	1245120221
613	Main PCB	1246840289
614	Switch PCB	1246840145
615	Connector(CN301)	CKS2417
616	Connector(CN651)	CKS1946
617	Connector(CN652)	CKS2407
618	Socket(CN101)	1245100201
619	Socket(CN601)	1245100039

2.4 MD MECHANISM MODULE(2)



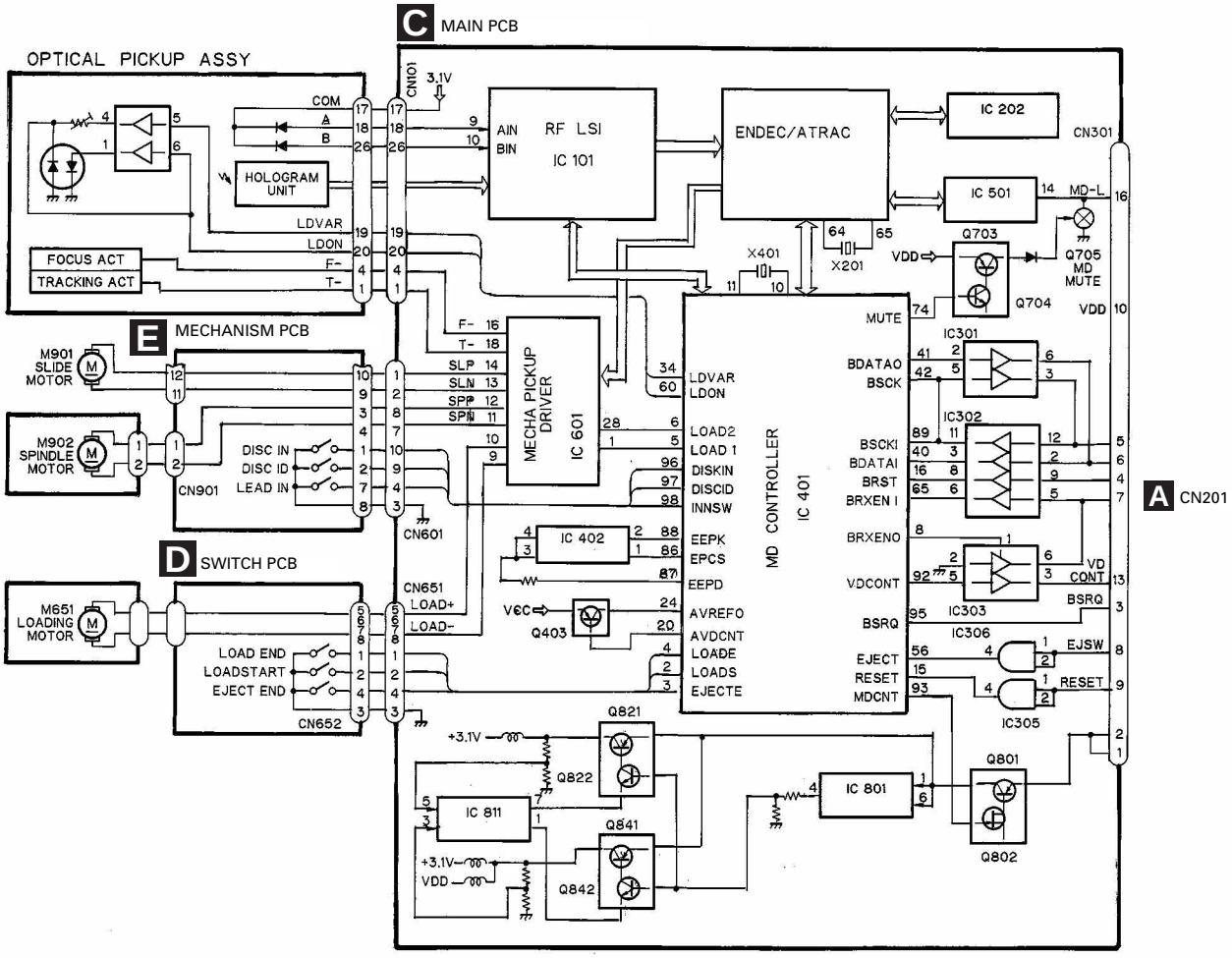
*One or two washers may be added to the parts for fine tuning of accuracy. When you exchange the parts such as (509 : spin motor) or (508: motor spacer), mount it exactly as it was placed before the exchange.

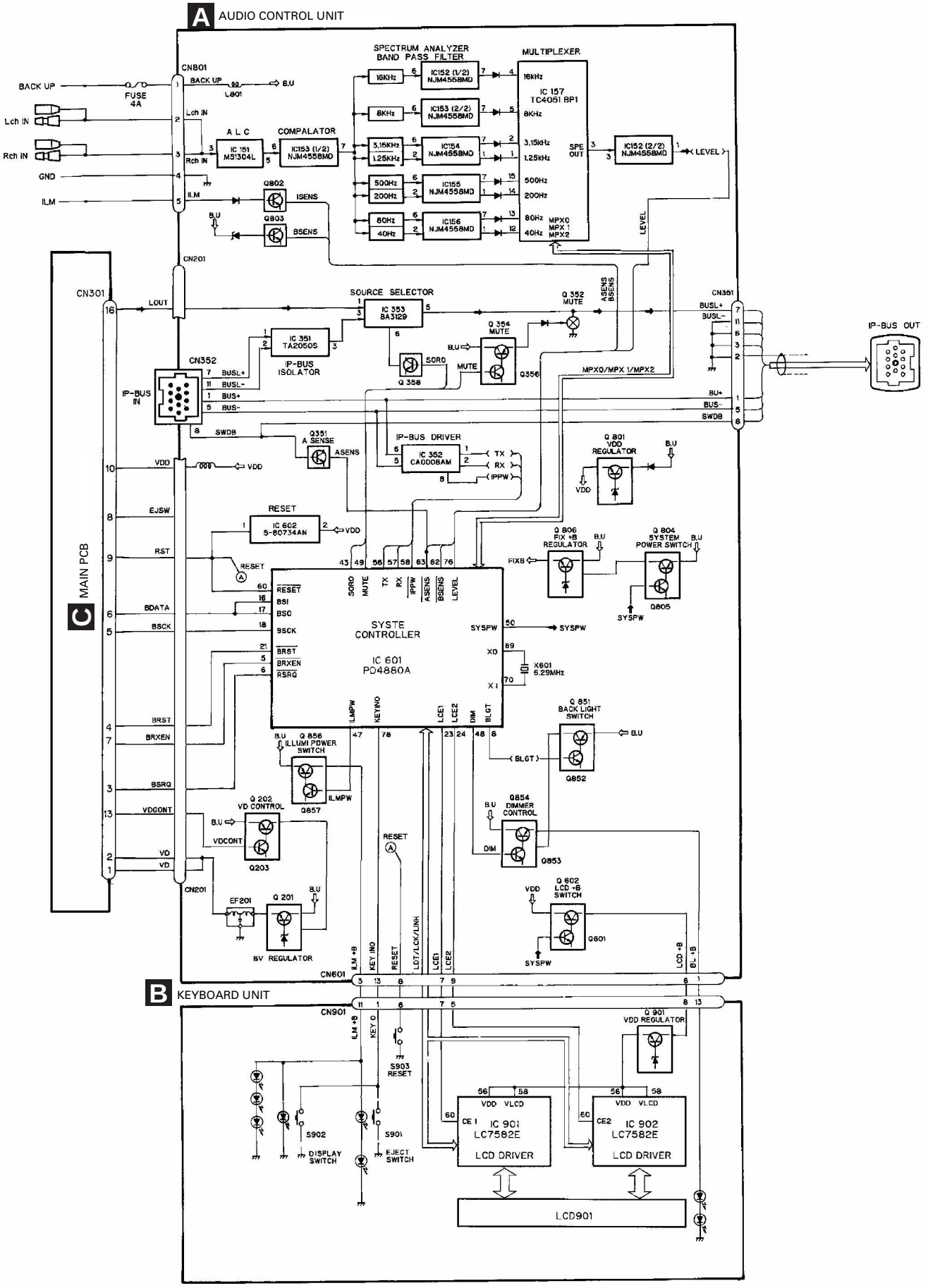
● MD MECHANISM MODULE(2) SECTION PARTS LIST

Mark No.	Description	Part No.
1	Holder Shaft Plate	1242000279
2	Shaft Guide Holder	1242000064
3	Drive Screw Assy Unit	1242000346
4	Main Chassis Assy	1242070065
5	Shaft Catch Spring	1242580007
6	Clip Spring	1242580067
7	Grip Rack	1242810021
8	Pickup Slide Shaft	1242900127
9	Slide Shaft(S)	1242900011
10	Mechanism Cushion	1243260122
11	Spring Cushion	1243260031
12	Spacer(C)	1244130006
13	Mechanism Flexible PCB	1245210120
14	Optical Pickup Assy	1246170028
15	Spring B	1242580050
16-500	•••••	
501	Screw,1.4X2MM	1249700203
502	Screw,1.4X2.5MM	1249700007
503	Screw,1.4X2.2MM	1249700011
504	Screw,1.7X4.3MM	1249700055
505	Screw,1.4X4.5MM	1249700033
506	Screw,1.4X2.2MM	1309701315
507	Washer,1.4X0.5MM	1309900937
508	Washer,2.8X3.9X0.05MM	1249900020
509	Spin Motor(M902)	1246300069
510	Slide Motor(M901)	1246300073
511	Mechanism PCB	1246840251
512	Connector(CN901)	1425100236

3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

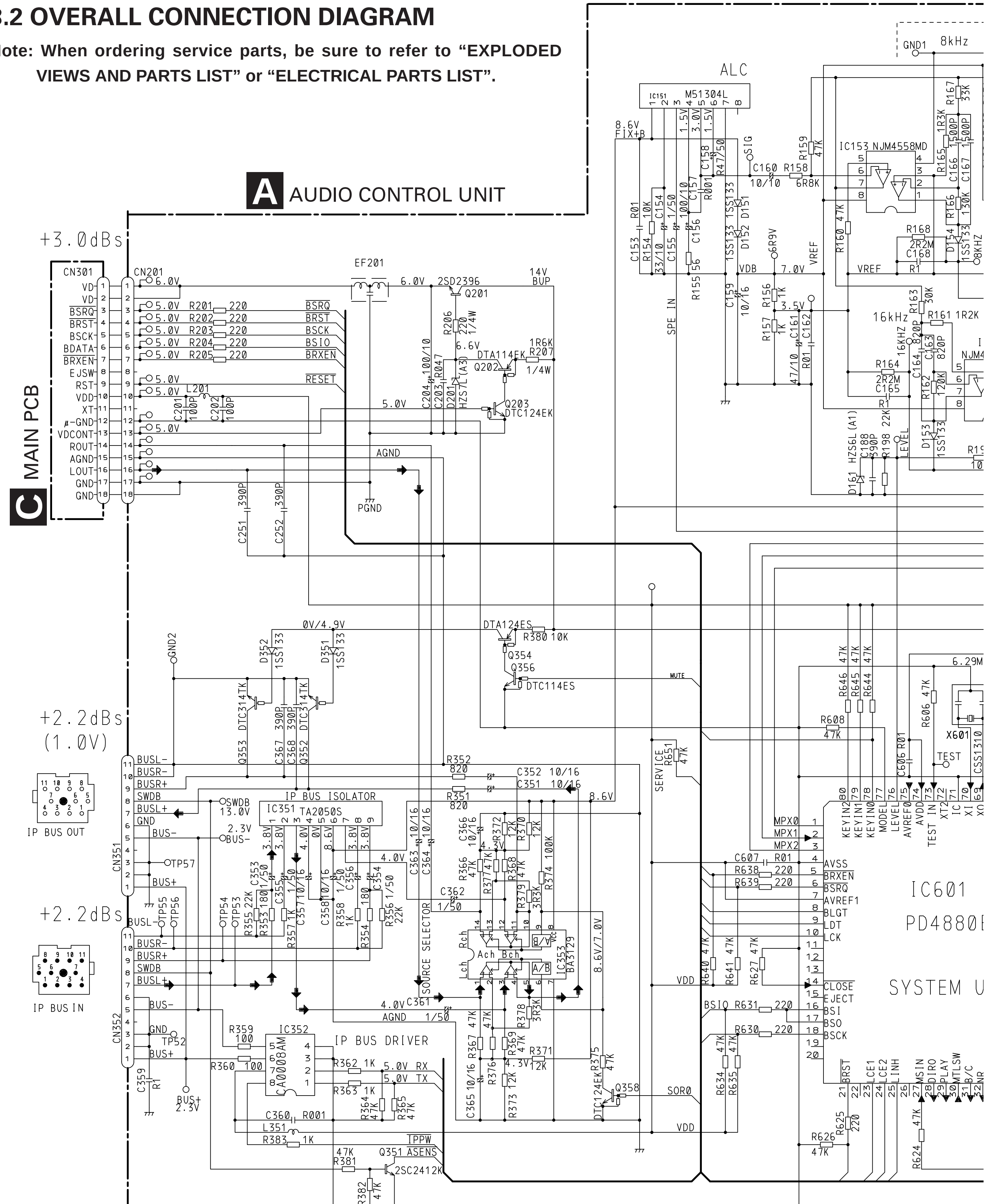
3.1 BLOCK DIAGRAM




A AUDIO CONTROL UNIT
SPECTRUM ANALYZER BAND PASS FILTER
MULTIPLEXER
CN801
BACK UP
FUSE 4A
Lch IN
Rch IN
GND
ILM
A L C
COMPALATOR
IC 151 M51304L
IC153 (1/2) NJM4558MD
IC152 (1/2) NJM4558MD
IC153 (2/2) NJM4558MD
IC154 NJM4558MD
IC155 NJM4558MD
IC156 NJM4558MD
16KHz
8KHz
3.15KHz
1.25KHz
500Hz
200Hz
80Hz
40Hz
IC 157 TC4051 BP1
MPX0
MPX 1
MPX2
SPE OUT
LEVEL
Q802
ISENS
Q803
BSENS
B.U
CN201
CN301
LOUT
SOURCE SELECTOR
IC 353 BA3129
Q 352 MUTE
ASENS
BSENS
CN351
BUSL+
BUSL-
IP-BUS OUT
IC 351 TA2050S
IP-BUS ISOLATOR
CN352
IP-BUS IN
BUS+
BUS-
SWDB
Q 354 MUTE
Q 358
SORO
MUTE
Q356
MPX0/MPX 1/MPX2
Q351 A SENSE
IP-BUS DRIVER
IC 352 CA0008AM
TX
RX
IPPW
Q 801 VDD REGULATOR
VDD
EJSW
RST
BDATA
BSCK
BRST
BRXEN
BSRQ
VDCONT
RESET
IC 602 S-80734AN
C MAIN PCB
SYSTE CONTROLLER
IC 601 PD4880A
SYSPW
XO
X1
X601 8.29MHz
Q 806 RIX +B REGULATOR
FIXB
Q 804 SYSTEM POWER SWITCH
Q805
ILMPW
KEYINO
LCE1
LCE2
DIM
BLGT
Q 856 ILLUMI POWER SWITCH
Q857
Q 851 BACK LIGHT SWITCH
Q852
Q 202 VD CONTROL
Q203
Q854 DIMMER CONTROL
Q853
EF201
Q 201
8V REGULATOR
Q 602 LCD +B SWITCH
Q601
LCD +B
BL +B
LDT/LCK/LINH
CN601
B KEYBOARD UNIT
CN901
KEY O
S903 RESET
Q 901 VDD REGULATOR
S902
DISPLAY SWITCH
S901
EJECT SWITCH
IC 901 LC7582E
IC 902 LC7582E
LCD DRIVER
VDD VLCD
CE 1
CE2
LCD901

3.2 OVERALL CONNECTION DIAGRAM

Note: When ordering service parts, be sure to refer to "EXPLODED VIEWS AND PARTS LIST" or "ELECTRICAL PARTS LIST".



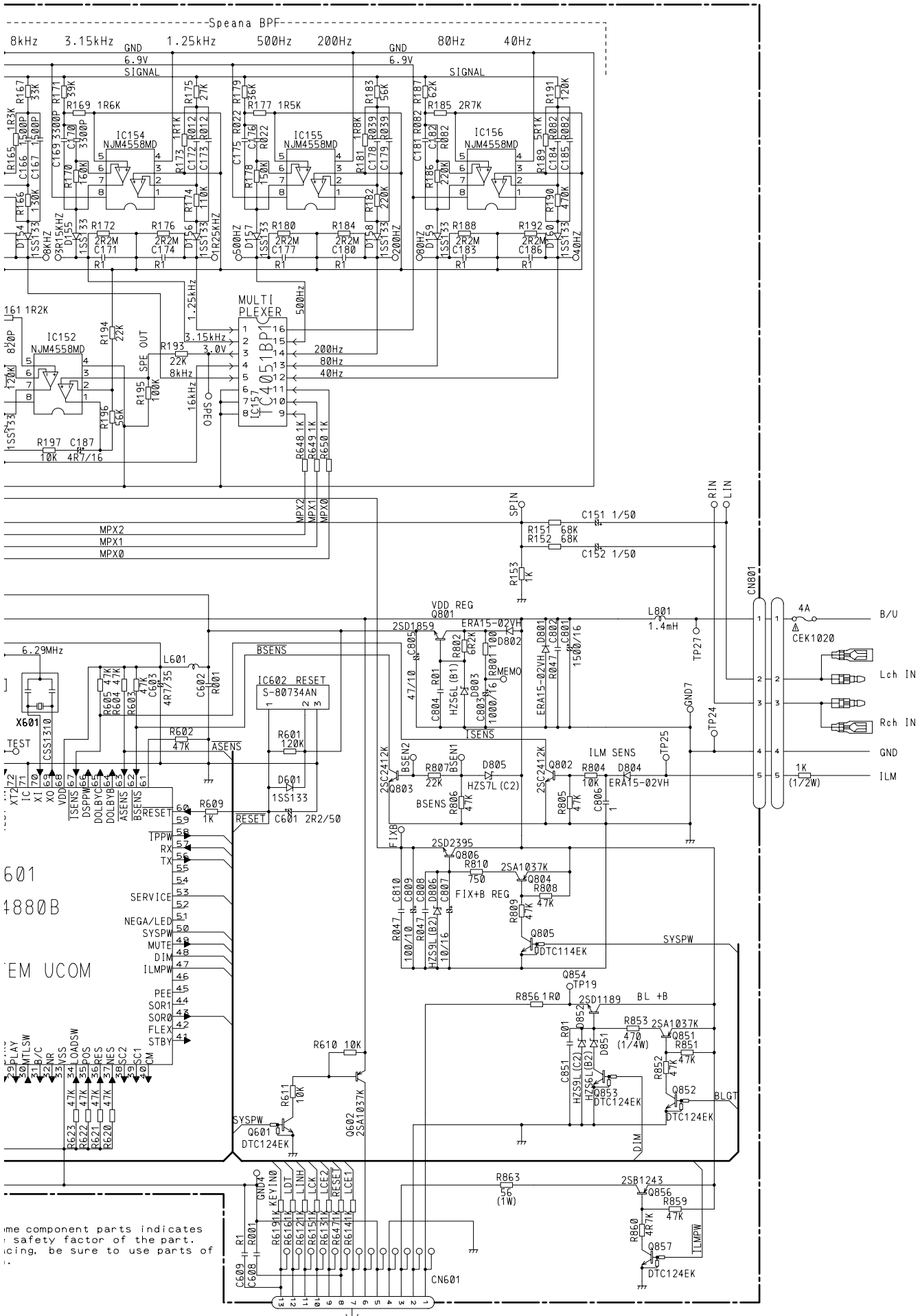
NOTE :

—▭— Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.

—┤├— Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.

Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022

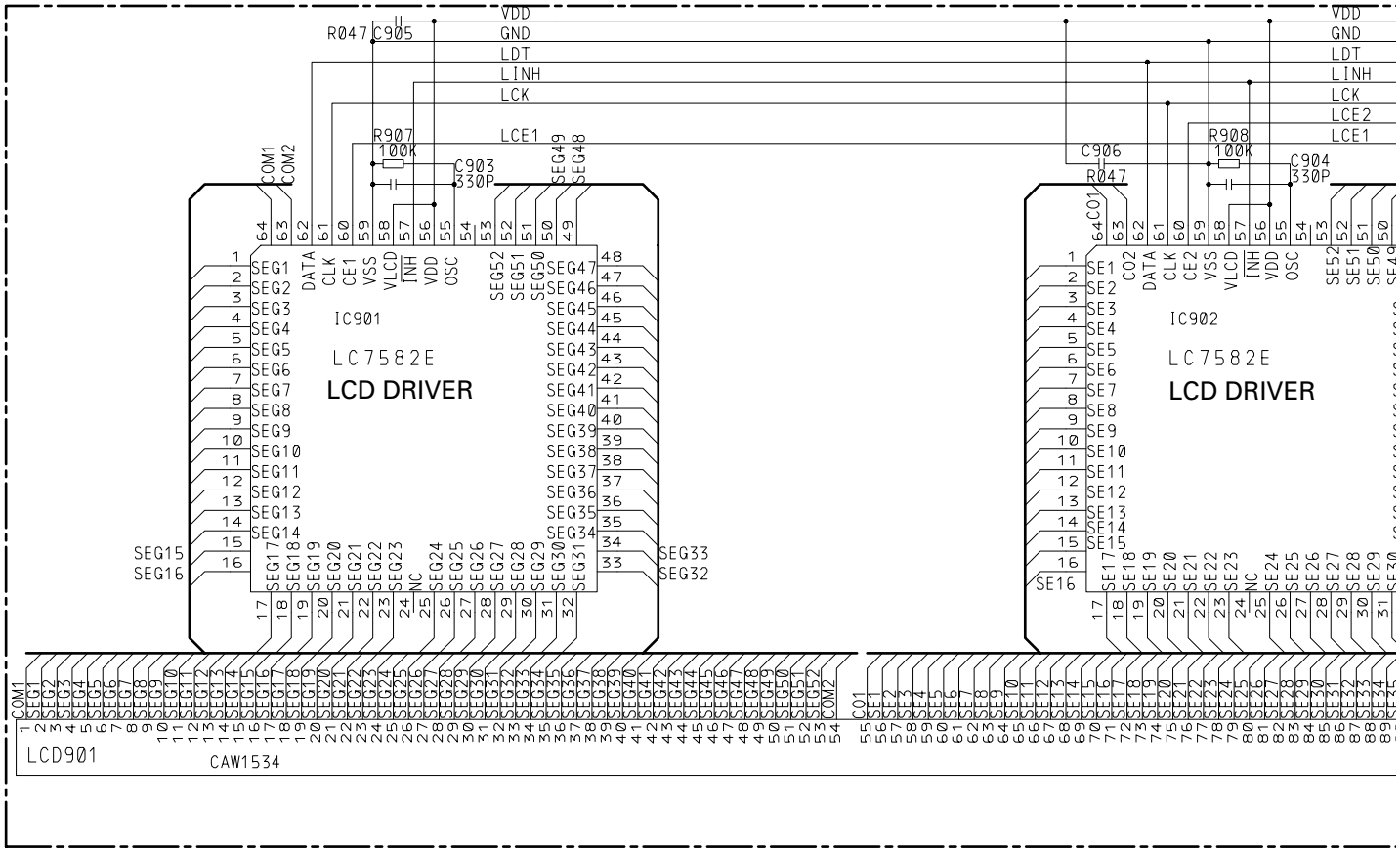
The ⚠ mark found on some comp the importance of the safety Therefore, when replacing, b identical designation.

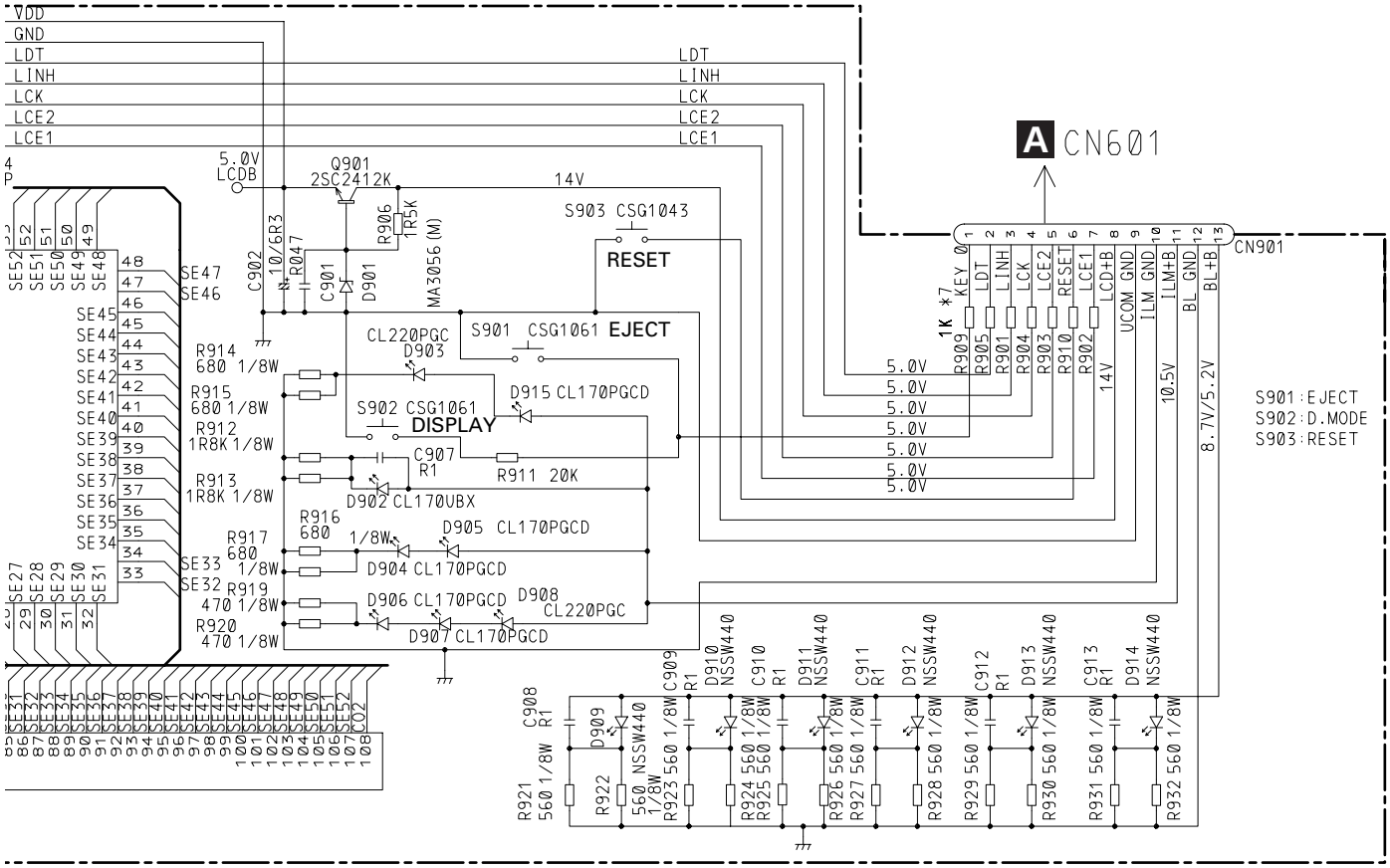


me component parts indicates
safety factor of the part.
acing, be sure to use parts of
.

3.3 KEYBOARD UNIT

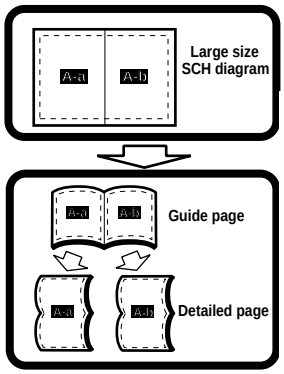
B KEYBOARD UNIT




VDD
GND
LDT
LINH
LCK
LCE2
LCE1
A CN601
CN901
5.0V LCDB
Q901 2SC2412K
14V
S903 CSG1043
RESET
S901 CSG1061 EJECT
S902 CSG1061 DISPLAY
CL220PGC D903
D915 CL170PGCD
D902 CL170UBX
D905 CL170PGCD
D904 CL170PGCD
D906 CL170PGCD
D908 CL220PGC
D907 CL170PGCD
C902 10/6R3
R047
C901
D901
R906 1R5K
MA3056 (M)
R914 680 1/8W
R915 680 1/8W
R912 1R8K 1/8W
R913 1R8K 1/8W
C907
R1
R911 20K
R916 680 1/8W
R917 680 1/8W
R919 470 1/8W
R920 470 1/8W
1K *7
R909
R905
R901
R904
R903
R910
R902
KEY 0
LDT
LINH
LCK
LCE2
RESET
LCE1
LCD+B
VCOM GND
ILM GND
ILM+B
BL GND
BL+B
5.0V
14V
10.5V
8.7V/5.2V
S901 : EJECT
S902 : D.MODE
S903 : RESET
C908 R1
D909
R921 560 1/8W
R922 560 NSSW440 1/8W
R923 560 1/8W
C909 R1
D910 NSSW440
R924 560 1/8W
R925 560 1/8W
C910 R1
D911 NSSW440
R926 560 1/8W
R927 560 1/8W
C911 R1
D912 NSSW440
R928 560 1/8W
R929 560 1/8W
C912 R1
D913 NSSW440
R930 560 1/8W
R931 560 1/8W
C913 R1
D914 NSSW440
R932 560 1/8W

3.4 MD MECHANISM MODULE

C-a



C MAIN PCB

AUDIO (Lch)
FOCUS ERROR
TRACKING ERROR
CARRIAGE(SLED)
SPINDLE

RF LSI
IC101
1245730345

OPTICAL PICKUP ASSY

MECHANISM DRIVER
1C601
BA5985FM

SLIDE MOTOR
1246300073

SPINDLE MOTOR
1246300069

D SWITCH PCB
LOAD END
LOAD START
EJECT END

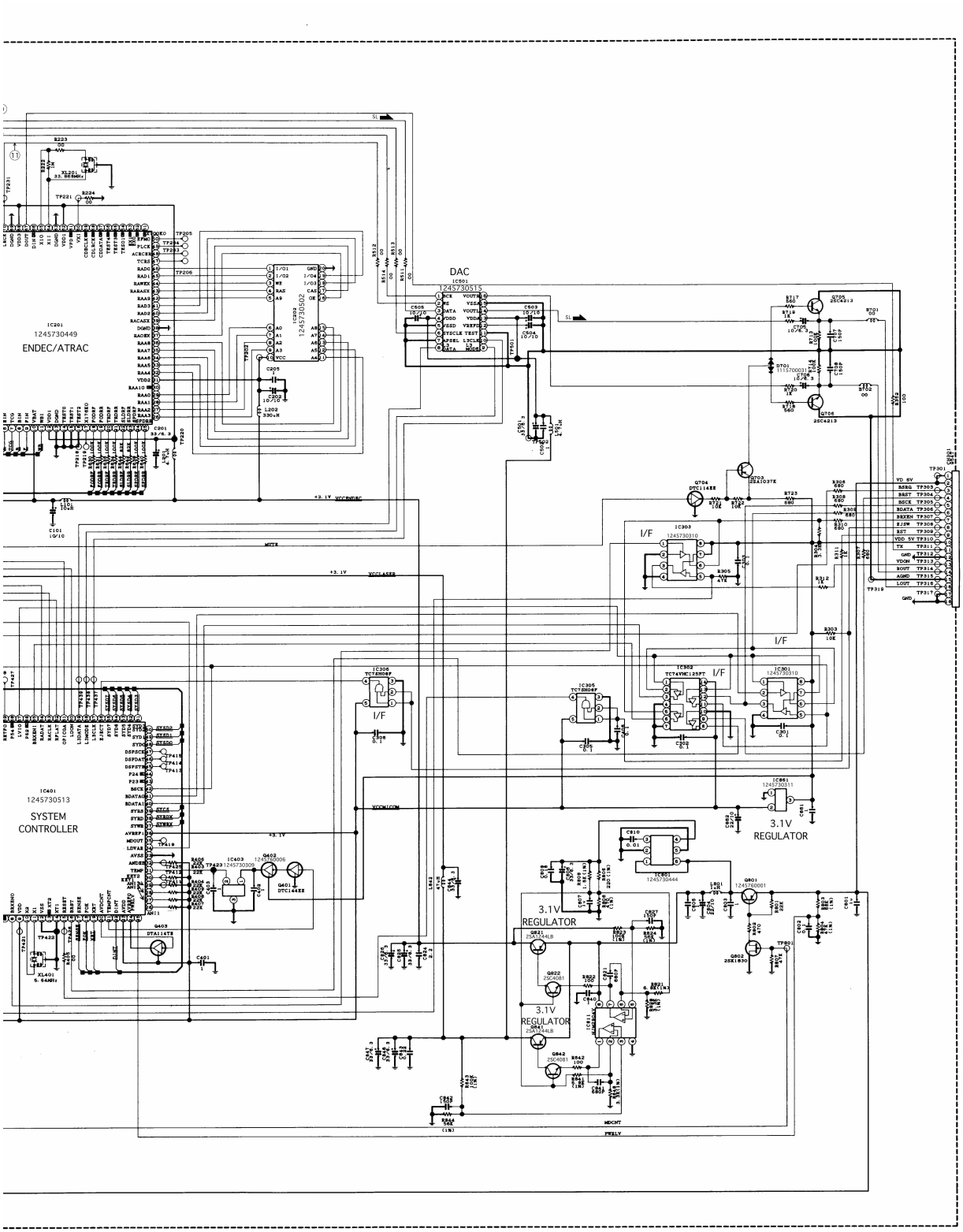
LOADING MOTOR
1246300043

SW651-653:1305301313

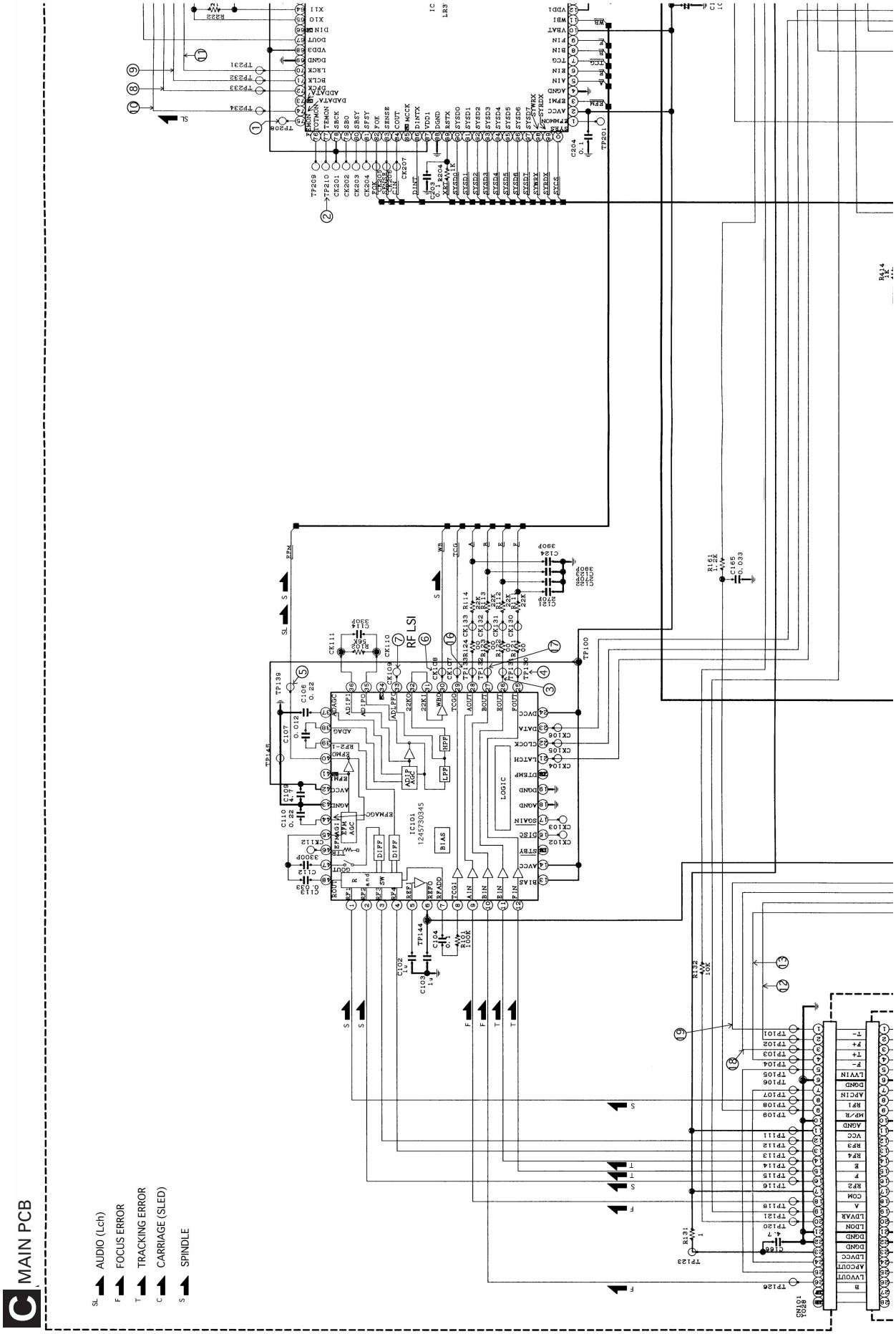
E MECHANISM PCB

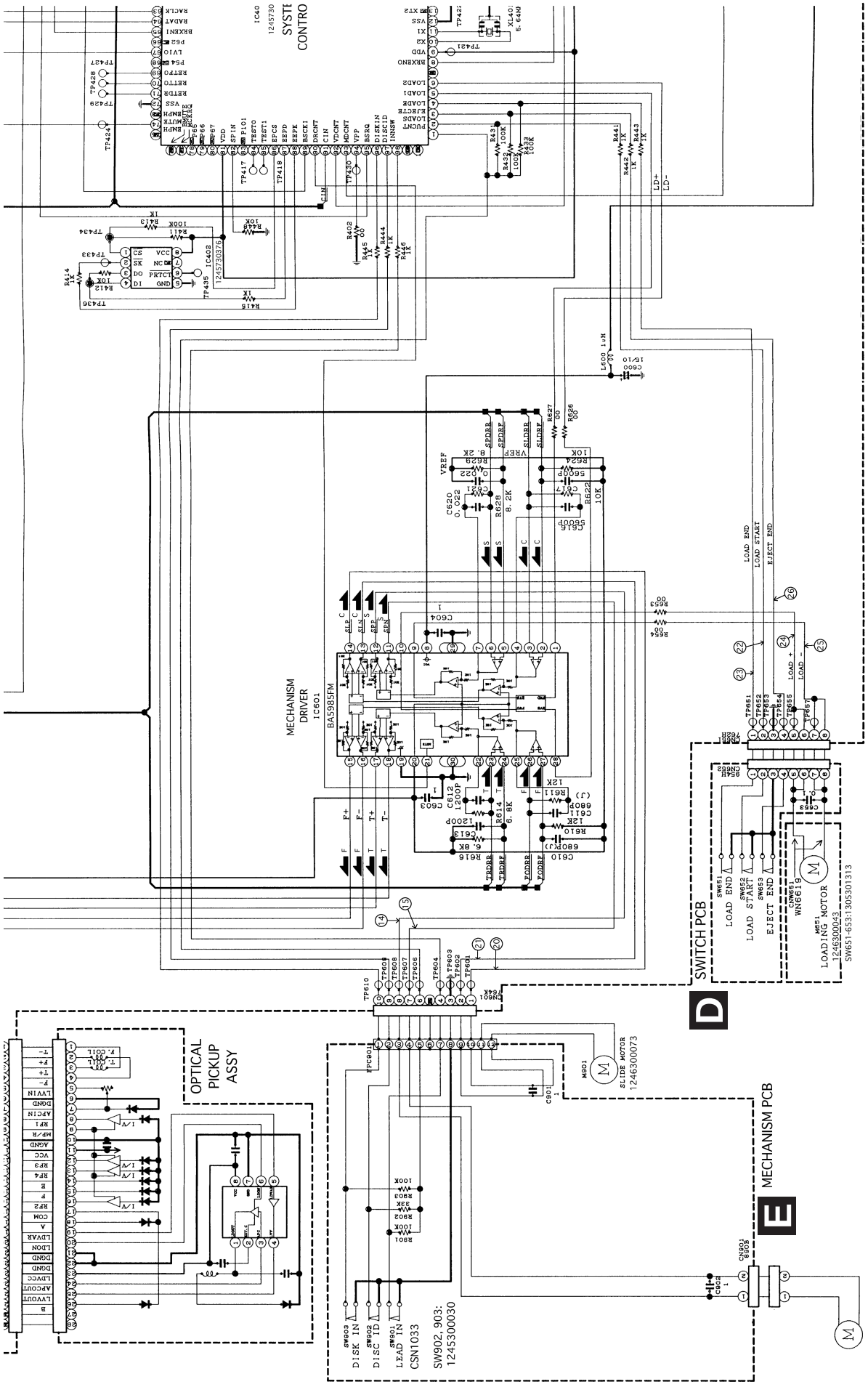
C D E

C-b

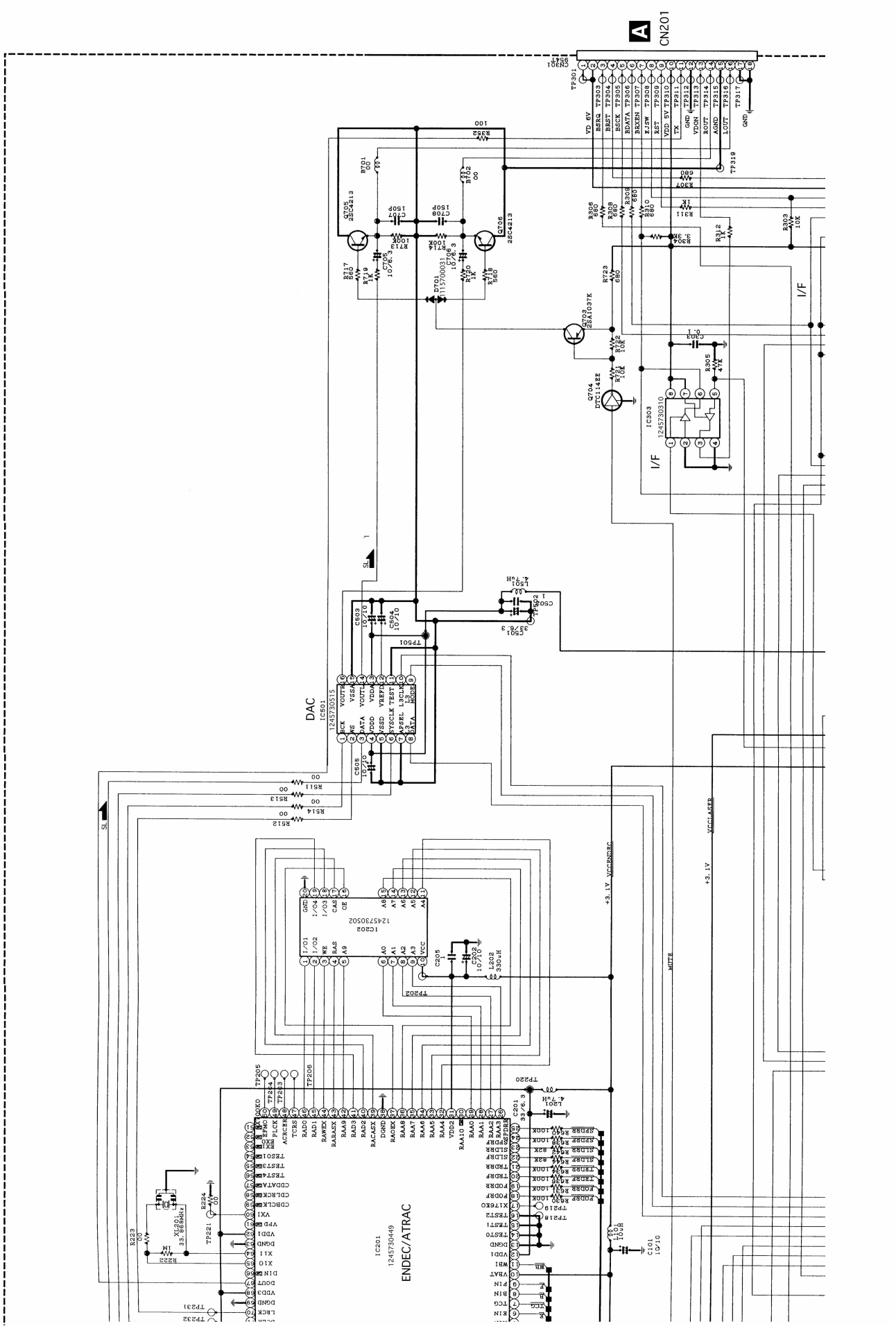

IC201
1245730449
ENDEC/ATRAC
DAC
IC501
1245730515
IC401
1245730513
SYSTEM
CONTROLLER
I/F
3.1V
REGULATOR
CN201

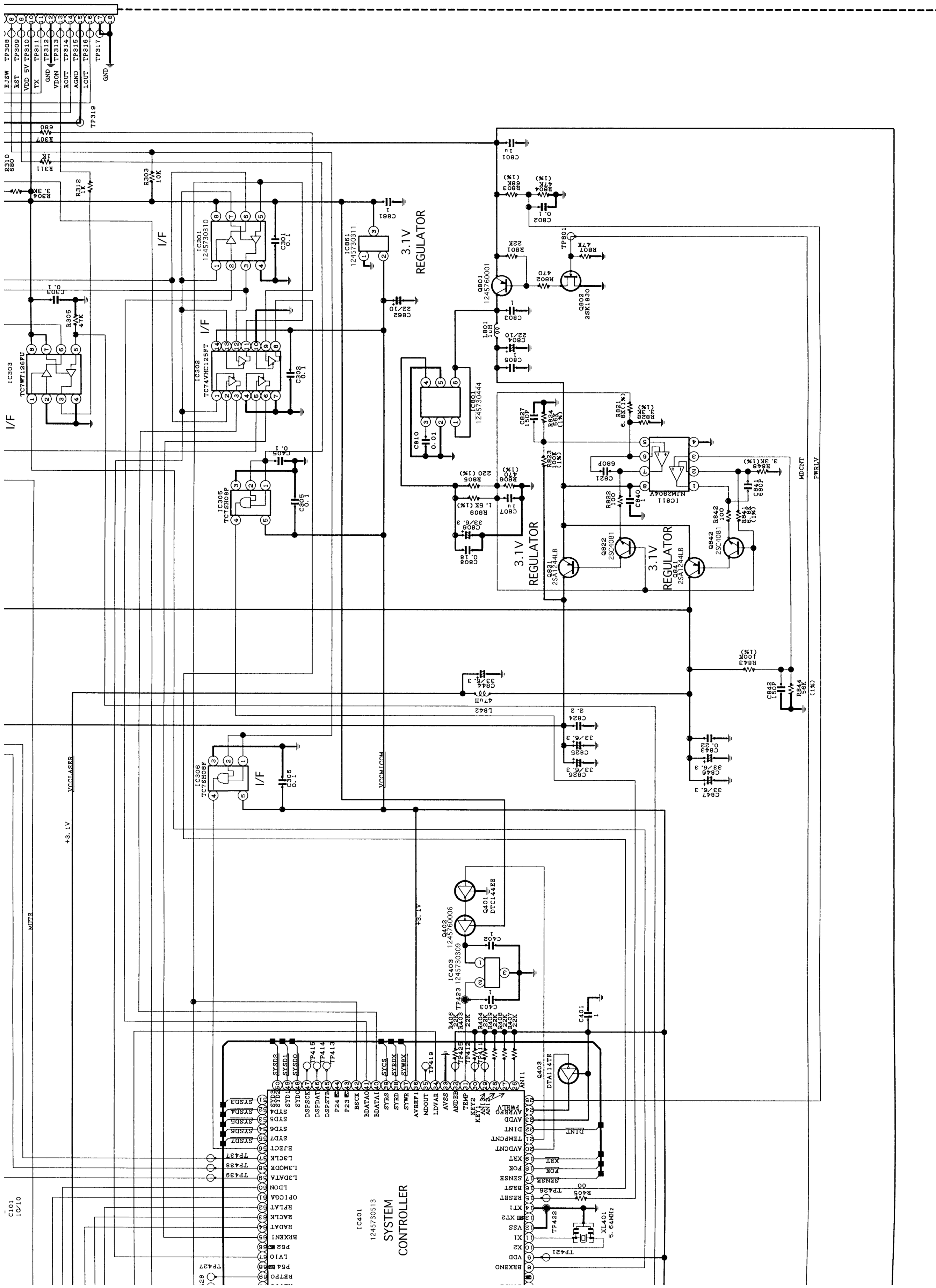
C-a C-b


RF LSI
IC101
1245730345
LOGIC
BIAS
AUDIO (Lch)
FOCUS ERROR
TRACKING ERROR
CARRIAGE (SLED)
SPINDLE
C MAIN PCB


SYSTEM CONTROL
MECHANISM DRIVER
IC601
BA5985FM
SWITCH PCB
LOADING MOTOR
1246300043
SW651-653:1305301313
OPTICAL PICKUP ASSY
MECHANISM PCB
SLIDE MOTOR
1246300073
SPINDLE MOTOR
1246300069
SW902, 903:
1245300030
CSN1033
DISK IN
DISC ID
LEAD IN
LOAD END
LOAD START
EJECT END

C-a C-b

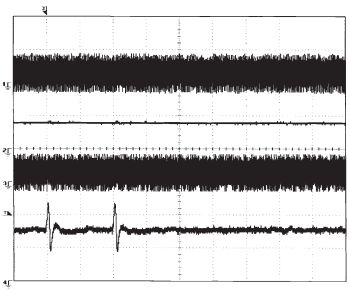

A
CN201
I/F
DAC
IC501
1245730515
ENDEC/ATRAC
IC201
1245730449
IC303
1245730310
IC202
1245730502
+3.1V
MUTE
VCCLASER


EJSW
RST
VDD 5V
TX
GND
VDON
ROUT
AGND
LOUT
TP308
TP309
TP310
TP311
TP312
TP313
TP314
TP315
TP316
TP317
TP319
R307 680
R310 680
R311 1K
R304 3.3K
R312 1K
R303 10K
I/F
IC301 1245730310
C301 0.1
IC861 1245730311
C861 1
C862 22/10
3.1V REGULATOR
C303 0.1
R305 47K
IC303 TC7WT126FU
IC302 TC74VHC125FT
C302 0.1
IC305 TC7SH08F
C305 0.1
C405 0.1
IC306 TC7SH08F
C306 0.1
VCCLASER
VCCMICOM
+3.1V
MUTE
C801 1u
R803 68K (1%)
R804 47K (1%)
C802 0.1
R801 22K
TP801
R807 47K
Q801 1245760001
R802 470
Q802 2SK1830
C803 1
L801 1uH
C804 22/10
C805 1
IC801 1245730444
C810 0.01
R805 220 (1%)
R806 470 (1%)
R808 1.5K (1%)
C807 1u
C806 33/6.3
C808 0.18
C827 150P
R824 56K (1%)
R823 100K (1%)
R821 6.8K (1%)
R828 3.3K (1%)
C821 680P
IC811 NJM2904V
R822 100
C840 1
R848 3.3K (1%)
C841 680P
R842 100
R841 6.8K (1%)
Q822 2SC4081
Q821 2SA1244LB
Q842 2SC4081
Q841 2SA1244LB
MDCNT
PWRLV
R843 100K (1%)
C842 150P
R844 56K (1%)
C844 33/6.3
L842 47uH
C824 2.2
C825 33/6.3
C826 33/6.3
C843 0.22
C846 33/6.3
C847 33/6.3
Q401 DTC144EE
Q402 1245760006
C402 1
IC403 1245730309
TP423
C403 1
R406 22K
R403 22K
R404 22K
R409 22K
R408 22K
R407 22K
C401 1
Q403 DTA114TE
IC401 1245730513
SYSTEM CONTROLLER
SYSD2
SYSD1
SYSD0
TP415
TP414
TP413
SYCS
SYRDX
SYWRX
TP419
TP425
TP412
TP411
SYD3
SYD2
SYD1
SYD0
DSPSCK
DSPDAT
DSPSTB
P24
P23
BSCK
BDATA0
BDATA1
SYRS
SYRD
SYWR
AVREF1
MDOUT
LDVAR
AVSS
ANDER
TEMP
KEY2
KEY1
ANI3
ANI2
ANI1
PWRLV
AVREF0
AVDD
DINT
TEMPCNT
AVDCNT
XRT
FOK
SENSE
BRST
RESET
XT1
XT2
VSS
X1
X2
VDD
BRXENO
SYD4
SYD5
SYD6
SYD7
EJECT
L3CLK
L3MODE
L3DATA
LDON
OPICGA
RFLAT
RACLK
RADAT
BRXENI
P52
LVIO
P54
RETFO
SYSD3
SYSD4
SYSD5
SYSD6
SYSD7
TP437
TP438
TP439
TP427
TP426
R405 00
TP422
XL401 5.64MHz
TP421
C101 10/10

Note: The encircled numbers denote measuring pointes in the circuit diagram.

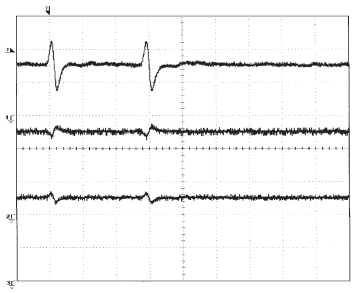
● Waveforms

① CH1 : FEMON 5V/div 2ms/div
① CH2 : FEMON+LPF 2V/div 2ms/div
② CH3 : TEMON 5V/div 2ms/div
② CH4 : TEMON+LPF 2V/div 2ms/div
Normal mode : play
Disc : Recordable

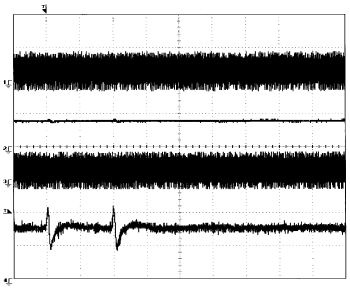


② CH1 : TEMON+LPF 1V/div 1ms/div
③ CH2 : E 500mV/div 1ms/div
④ CH3 : F 500mV/div 1ms/div

Normal mode : play
Disc : Recordable

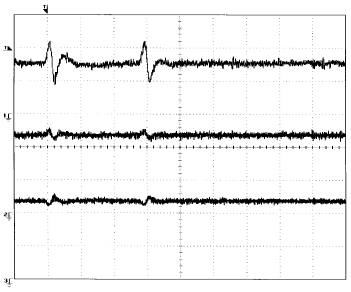


① CH1 : FEMON 1V/div 2ms/div
① CH2 : FEMON+LPF 500mV/div 2ms/div
② CH3 : TEMON 500mV/div 2ms/div
② CH4 : TEMON+LPF 500mV/div 2ms/div
Normal mode : play
Disc : Premastered



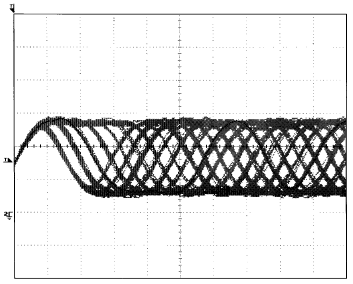
② CH1 : TEMON+LPF 1V/div 1ms/div
③ CH2 : E 500mV/div 1ms/div
④ CH3 : F 500mV/div 1ms/div

Normal mode : play
Disc : Premastered



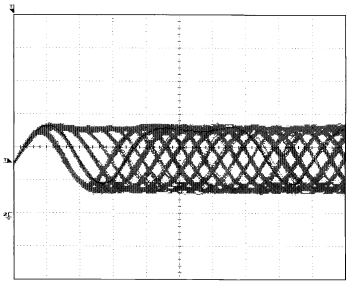
⑤ CH1 : EFM 1V/div 500ns/div

Test mode : play
Disc : Recordable



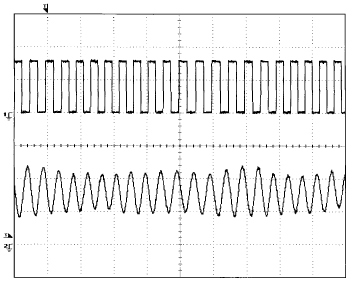
⑤ CH1 : EFM 1V/div 500ns/div

Test mode : play
Disc : Premastered

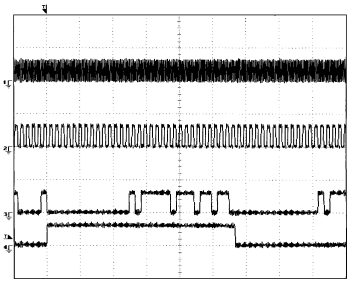


⑥ CH1 : WBO 2V/div 100ms/div
⑦ CH2 : ADLPFO 1V/div 100ms/div

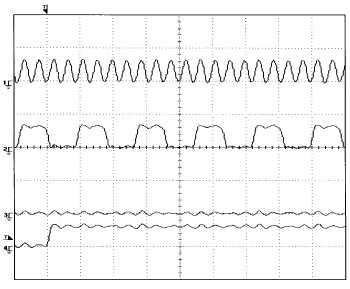
Test mode : play
Disc : Recordable



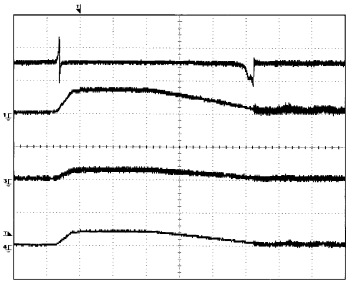
⑧ CH1 : DFCK 5V/div 2ms/div
⑨ CH2 : BCLK 5V/div 2ms/div
⑩ CH3 : DADATA 5V/div 2ms/div
⑪ CH3 : LRCK 5V/div 2ms/div
Normal mode : play
Disc : Recordable



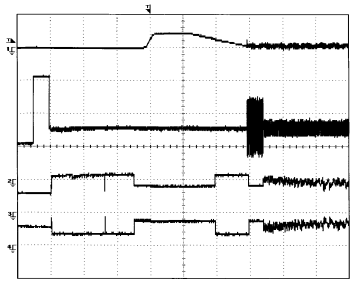
⑧ CH1 : DFCK 5V/div 200ns/div
⑨ CH2 : BCLK 5V/div 200ns/div
⑩ CH3 : DADATA 5V/div 200ns/div
⑪ CH4 : LRCK 5V/div 200ns/div
Normal mode : play
Disc : Recordable



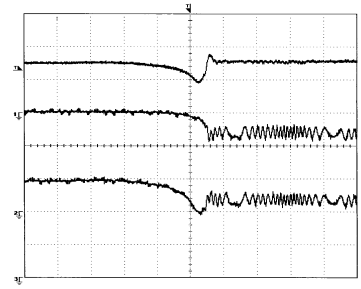
① CH1 : FEMON+LPF 1V/div 100ms/div
⑫ CH2 : F+ 2V/div 100ms/div
⑬ CH3 : F- 2V/div 100ms/div
⑫⑬ CH4 : F+ - F- 2V/div 100ms/div
Focus close
Disc : Recordable



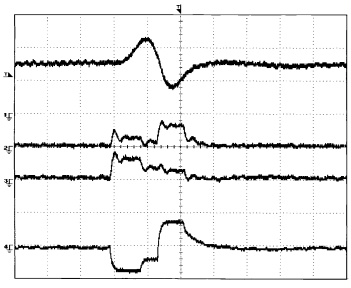
⑫⑬ CH1 : F+ - F- 2V/div 200ms/div
② CH2 : TEMON+LPF 1V/div 200ms/div
⑭ CH3 : SP+ 2V/div 200ms/div
⑮ CH4 : SP- 2V/div 200ms/div
Focus close
Disc : Recordable



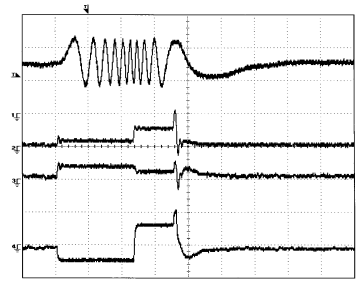
① CH1 : FEMON+LPF 1V/div 10ms/div
⑯ CH2 : A 500mV/div 10ms/div
⑰ CH3 : B 500mV/div 10ms/div
Focus close
Disc : Recordable



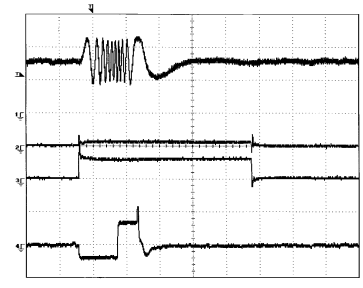
② CH1 : TEMON+LPF 1V/div 200ms/div
⑱ CH2 : T+ 2V/div 200ms/div
⑲ CH3 : T- 2V/div 200ms/div
⑱⑲ CH4 : T+ - T- 2V/div 200ms/div
Test mode : 1T REV jump
Disc : Recordable



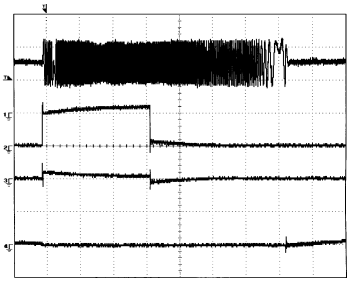
② CH1 : TEMON+LPF 1V/div 500ms/div
⑱ CH2 : T+ 2V/div 500ms/div
⑲ CH3 : T- 2V/div 500ms/div
⑱⑲ CH4 : T+ - T- 2V/div 500ms/div
Test mode : 10T REV jump
Disc : Recordable



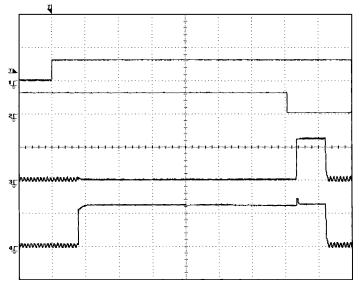
② CH1 : TEMON+LPF 1V/div 1ms/div
⑳ CH2 : SL+ 2V/div 1ms/div
㉑ CH3 : SL- 2V/div 1ms/div
⑳㉑ CH4 : SL+ - SL- 2V/div 1ms/div
Test mode : 10T REV jump
Disc : Recordable



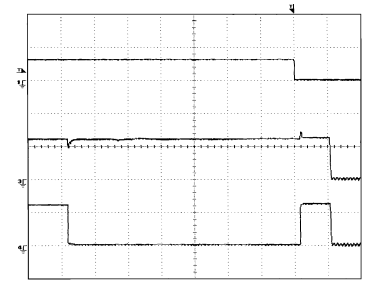
② CH1 : TEMON+LPF 1V/div 20ms/div
⑳ CH2 : SL+ 2V/div 20ms/div
㉑ CH3 : SL- 2V/div 20ms/div
⑳㉑ CH4 : SL+ - SL- 2V/div 20ms/div
Test mode : 400T REV jump
Disc : Recordable



㉒ CH1 : LOADSTART 5V/div 200ms/div
㉓ CH2 : LOADEND 5V/div 200ms/div
㉔ CH3 : L+ 5V/div 200ms/div
㉕ CH3 : L- 5V/div 200ms/div
Loading



㉖ CH1 : EJECTEND 5V/div 200ms/div
㉔ CH2 : L+ 5V/div 200ms/div
㉕ CH3 : L- 5V/div 200ms/div
Eject

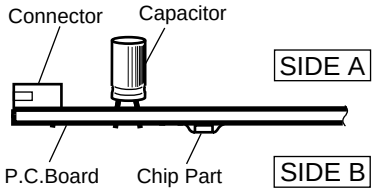


4. PCB CONNECTION DIAGRAM

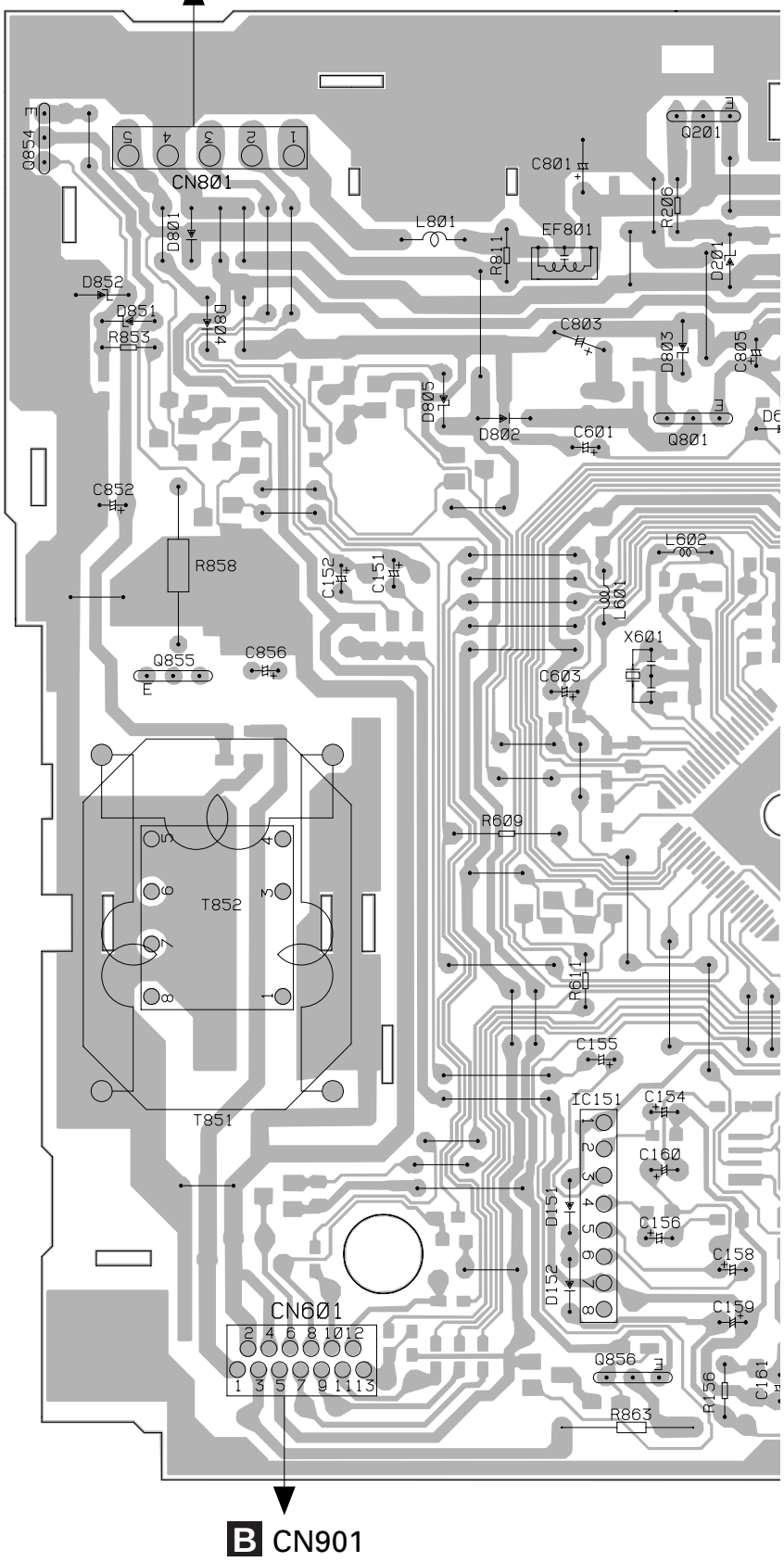
4.1 AUDIO CONTROL UNIT

NOTE FOR PCB DIAGRAMS

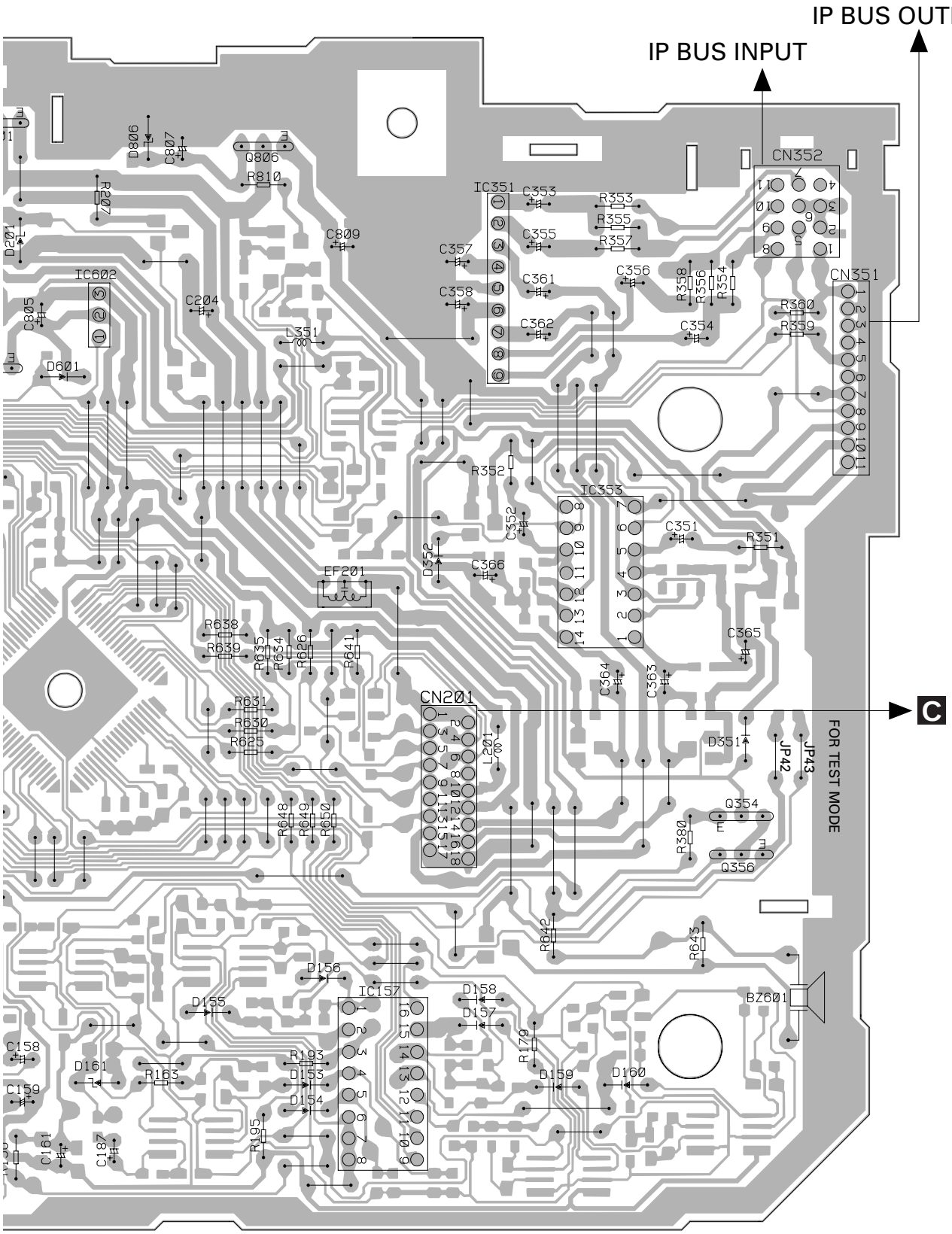
1. The parts mounted on this PCB include all necessary parts for several destination.
   For further information for respective destinations, be sure to check with the schematic diagram.
2. Viewpoint of PCB diagrams



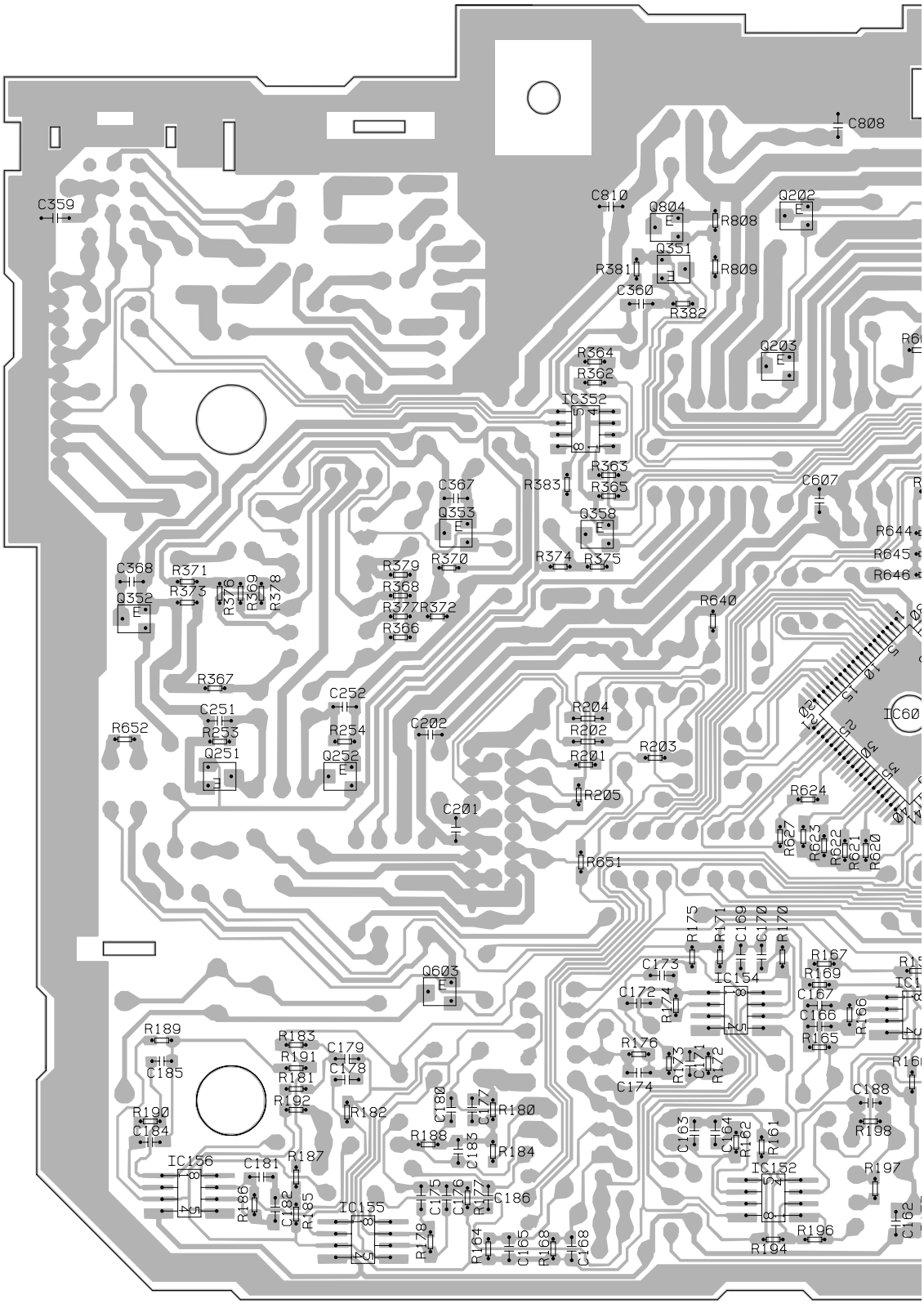
A AUDIO CONTROL UNIT



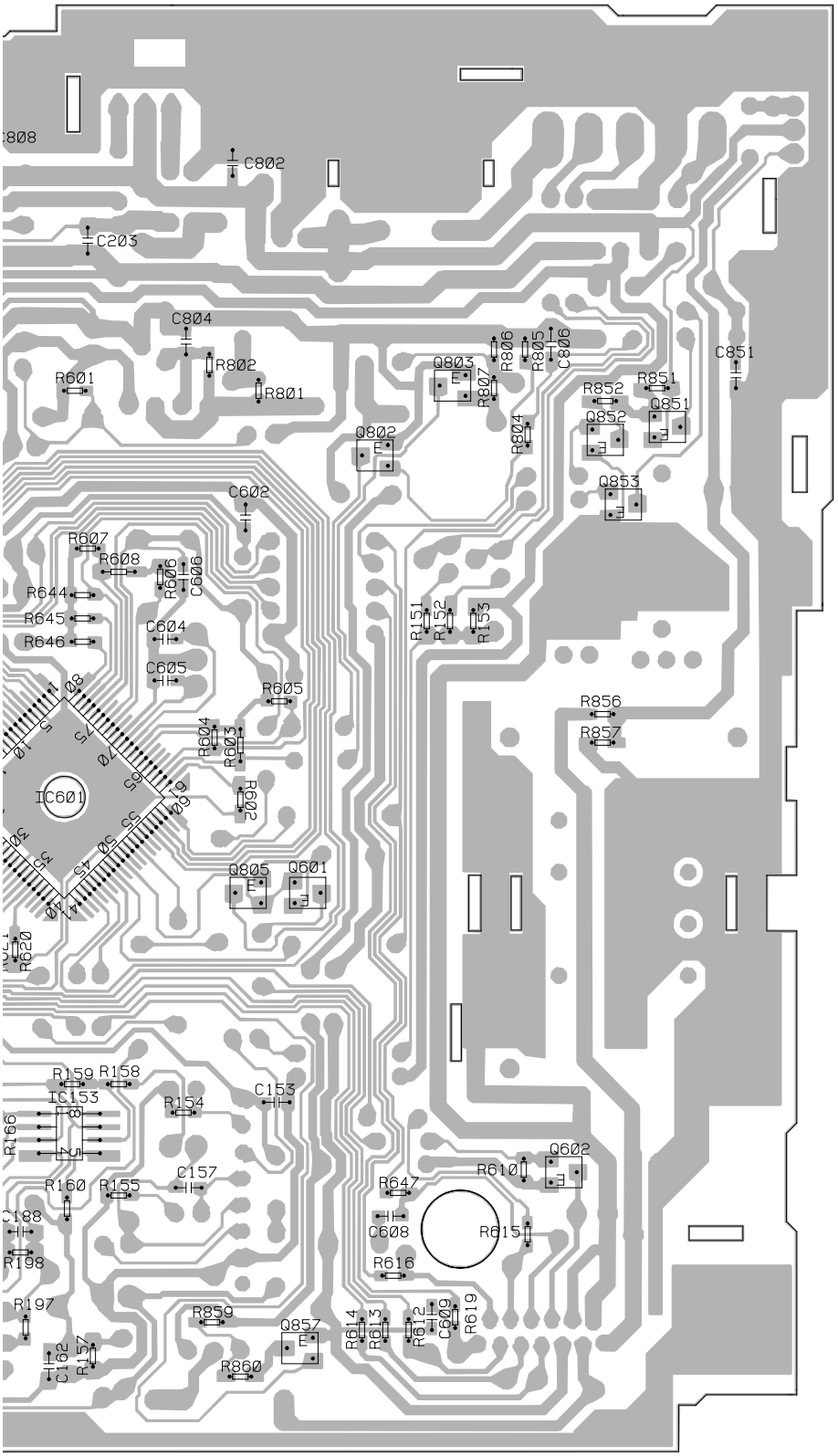
SIDE A


IP BUS OUTPUT
IP BUS INPUT
CN352
CN351
IC351
IC602
IC333
IC157
CN201
EF201
L351
L201
D601
D201
D806
C807
Q806
R810
R207
C809
C805
C204
C357
C358
C353
C355
C361
C362
C356
C354
R353
R355
R357
R358
R356
R354
R360
R359
R352
C352
D352
C366
C351
R351
C365
C364
C363
R638
R639
R635
R634
R626
R641
R631
R630
R625
R648
R649
R650
D351
JP42
JP43
FOR TEST MODE
Q354
Q356
R380
R642
R643
BZ601
D156
D155
D158
D157
R179
D159
D160
C158
D161
R163
C159
C161
C187
R193
D153
D154
R195
C
A
B
C
D

A AUDIO CONTROL UNIT



SIDE B



IC, Q

Q202
Q804

Q351

Q803

Q203 Q851
Q852
Q802
IC352
Q853

Q353 Q358

Q352

IC601

Q251 Q252
Q805 Q601

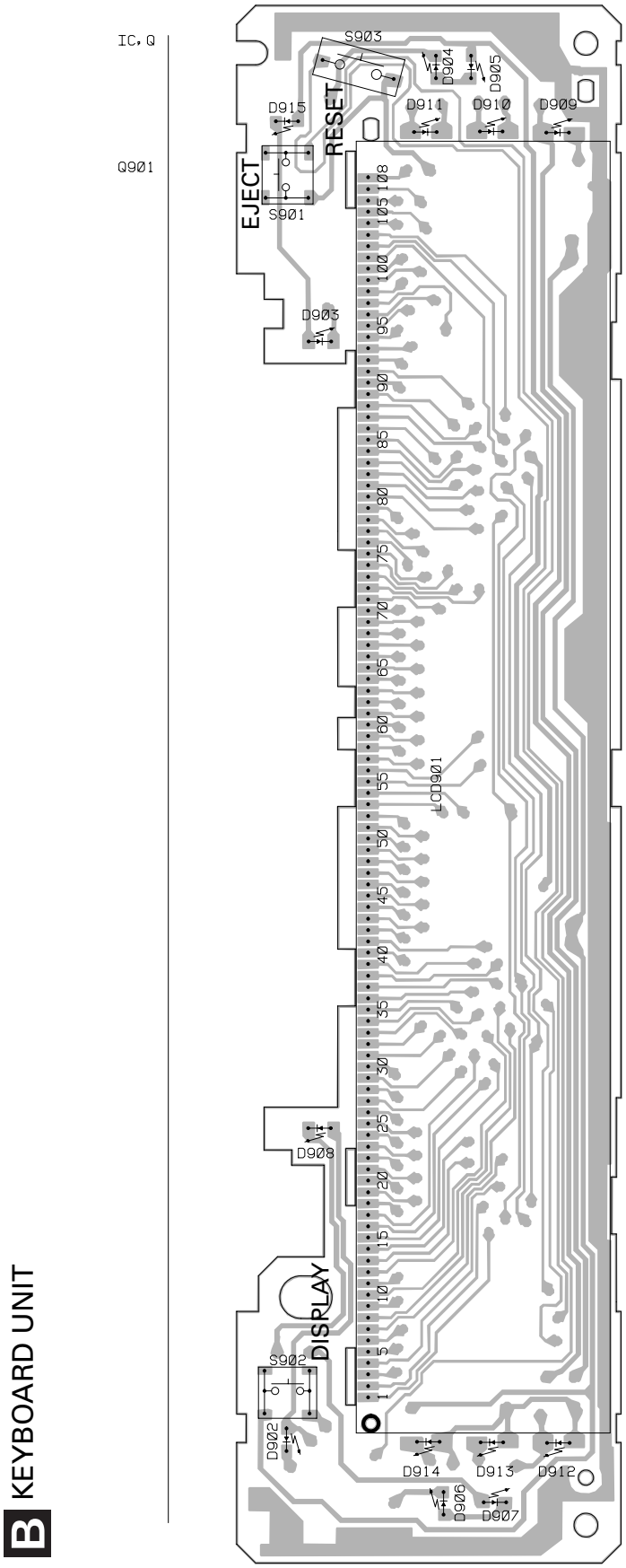
Q603
IC154
IC153
Q602

IC156
Q857 IC152
IC155

A B C D

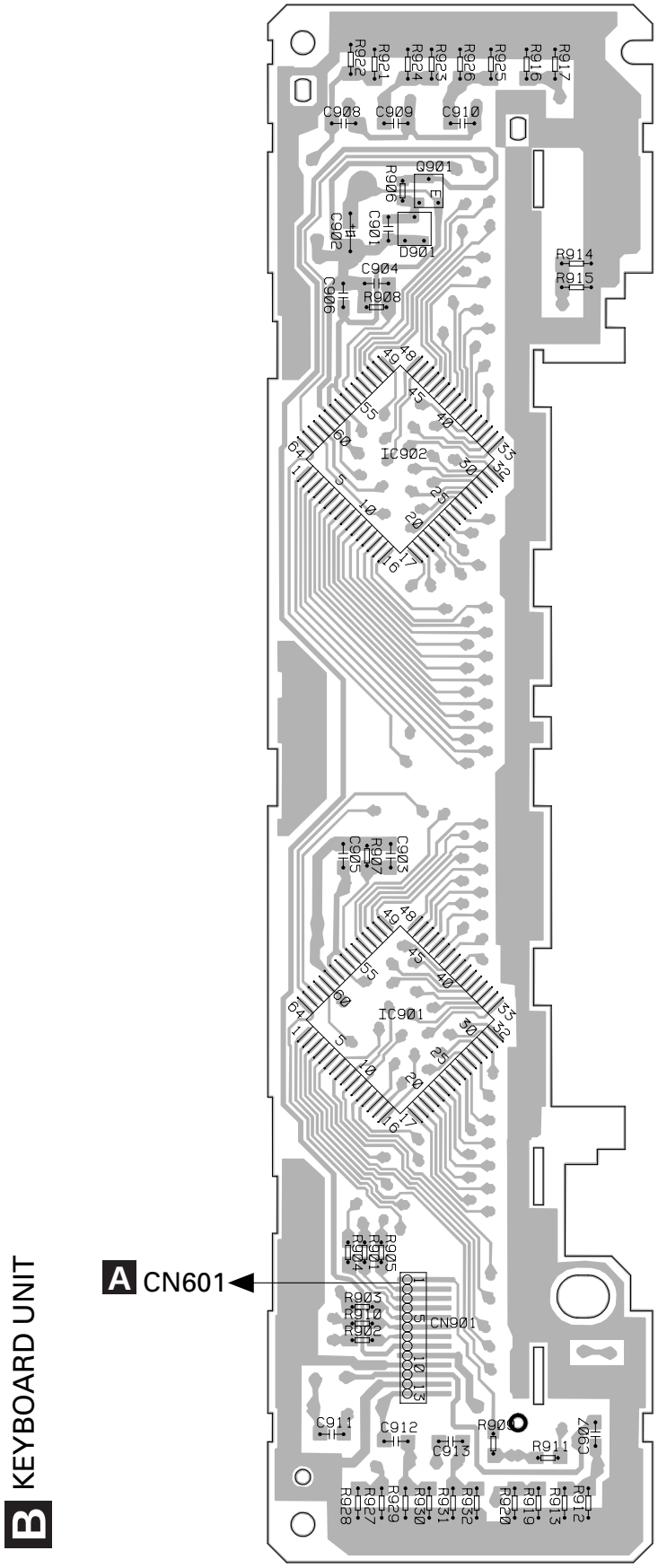
4.2 KEYBOARD UNIT

SIDE A

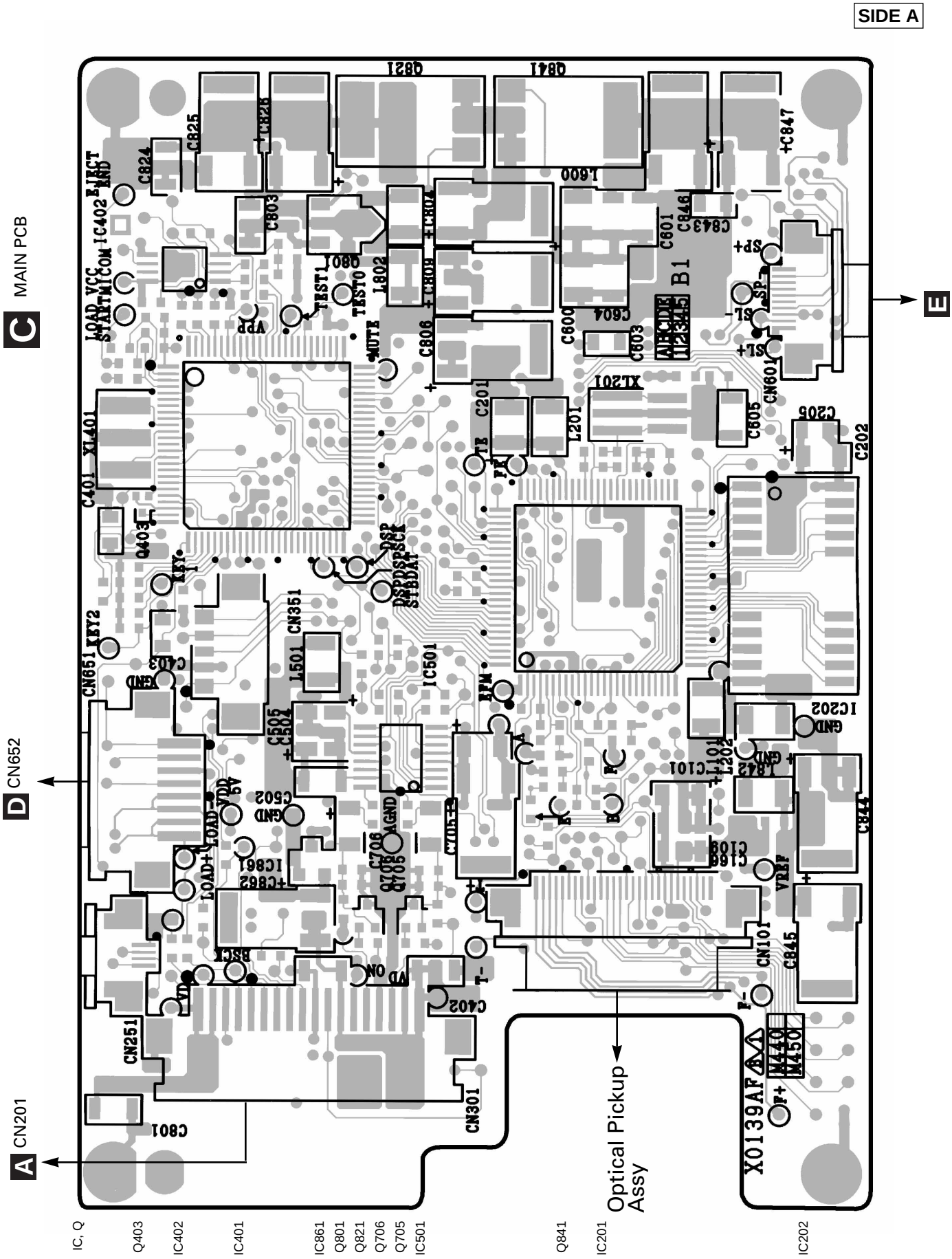


B KEYBOARD UNIT

SIDE B



4.3 MAIN PCB

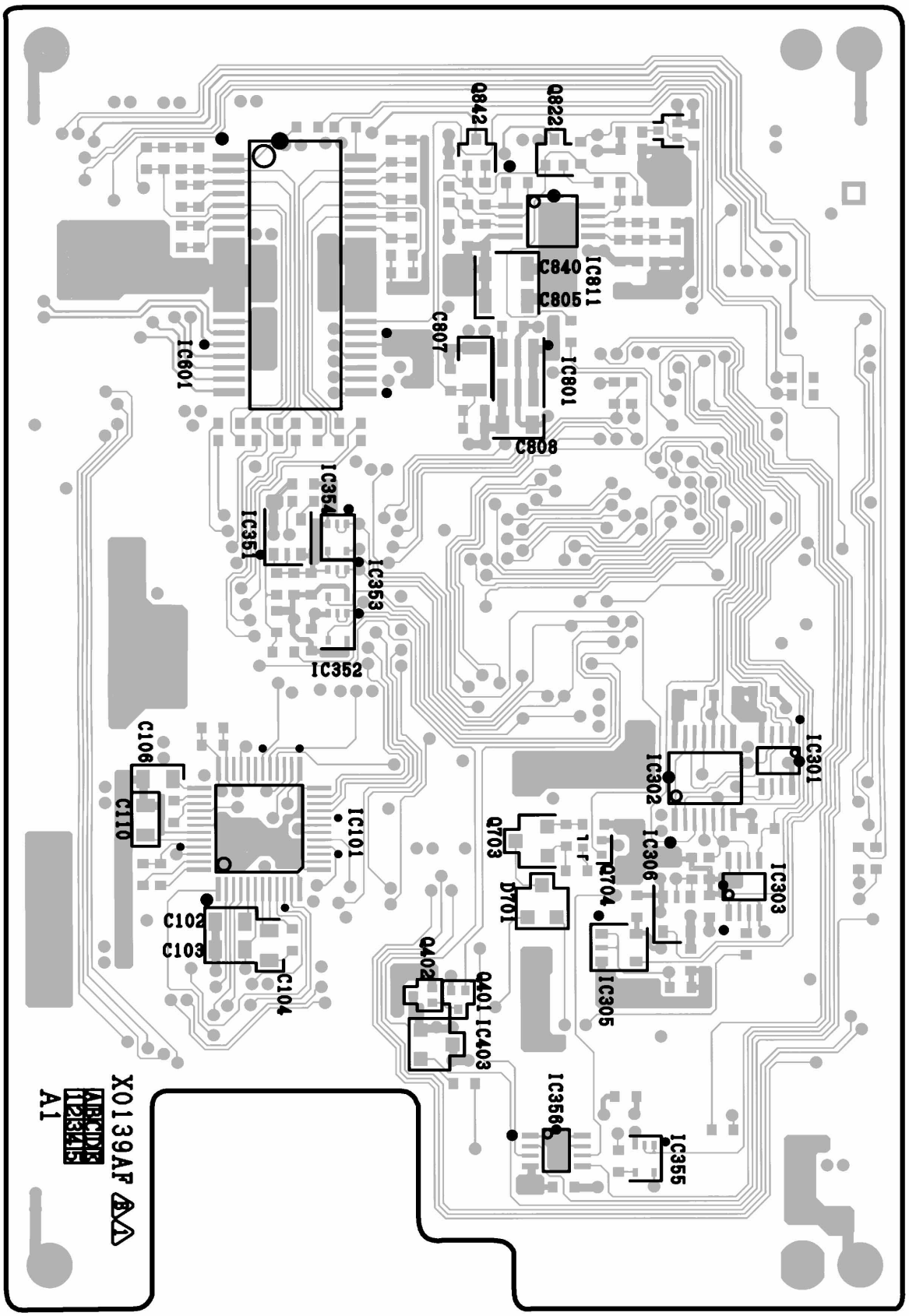

SIDE A
MAIN PCB
E
D CN652
A CN201
Optical Pickup Assy
IC, Q
Q403
IC402
IC401
IC861
Q801
Q821
Q706
Q705
IC501
Q841
IC201
IC202

C MAIN PCB

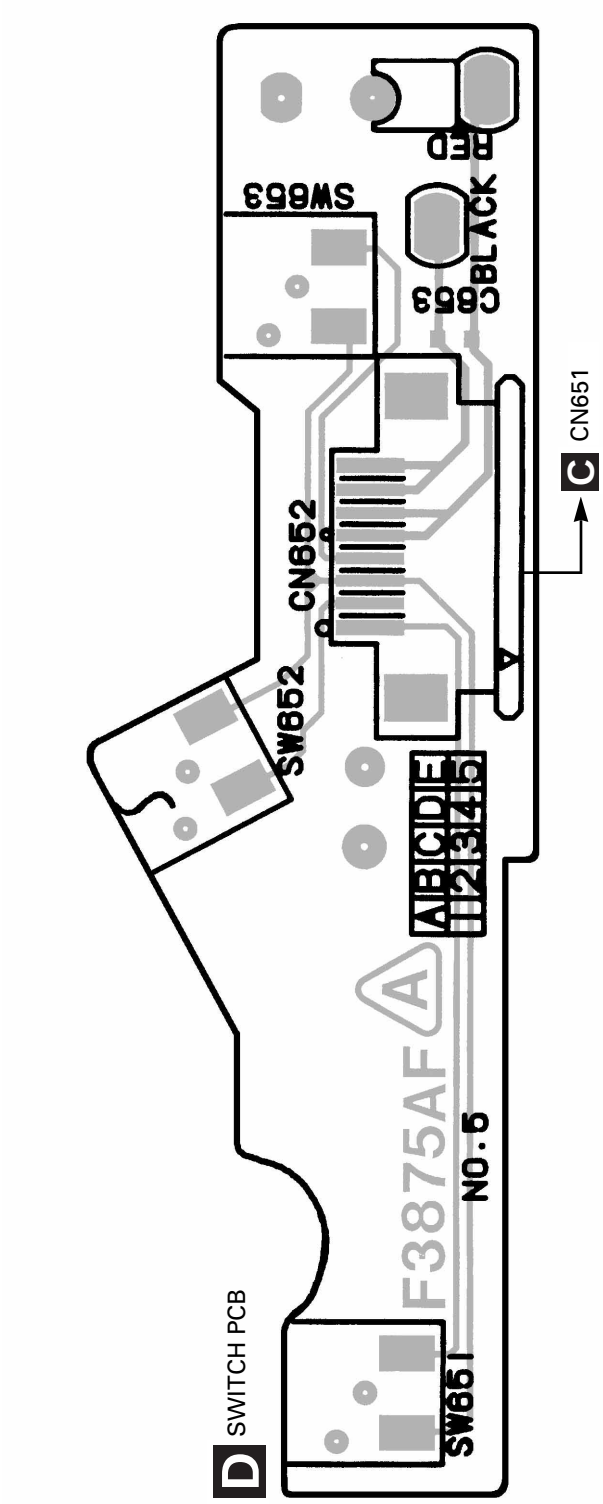
IC, Q

IC101 IC351 IC601 IC354 IC353 Q402 Q401 IC403 Q842 Q703 IC356 Q822 IC801 IC811 IC305 Q704 IC355 IC302 IC306 IC303 IC301

SIDE B

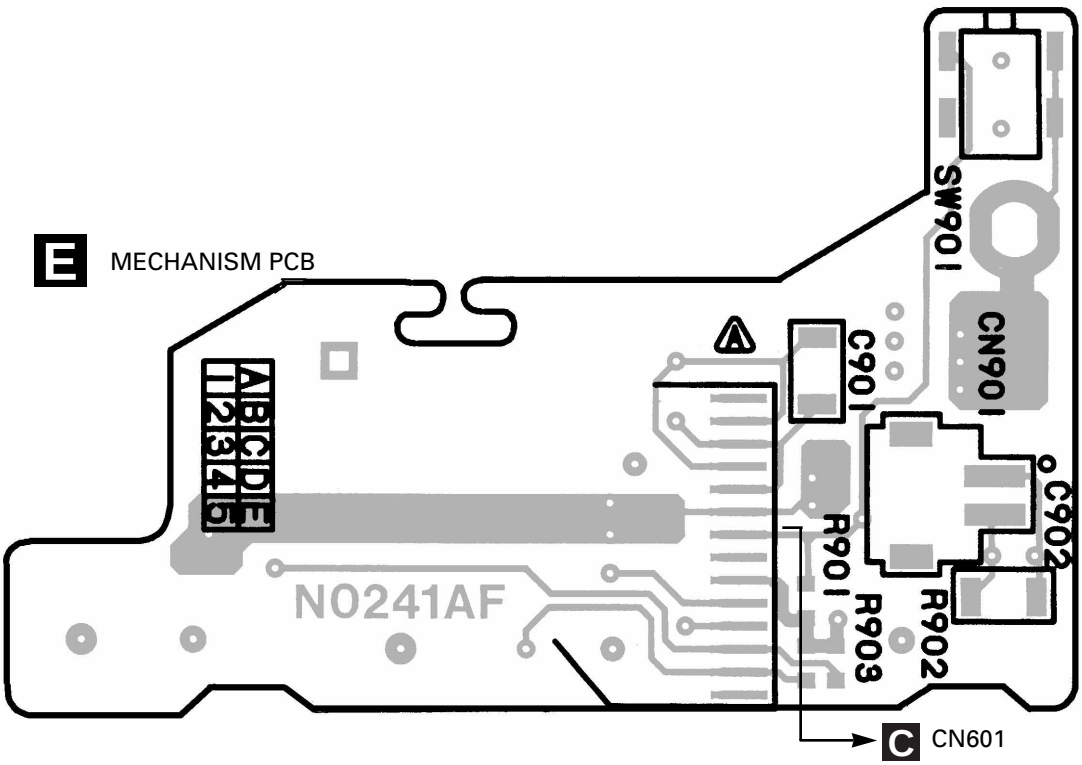


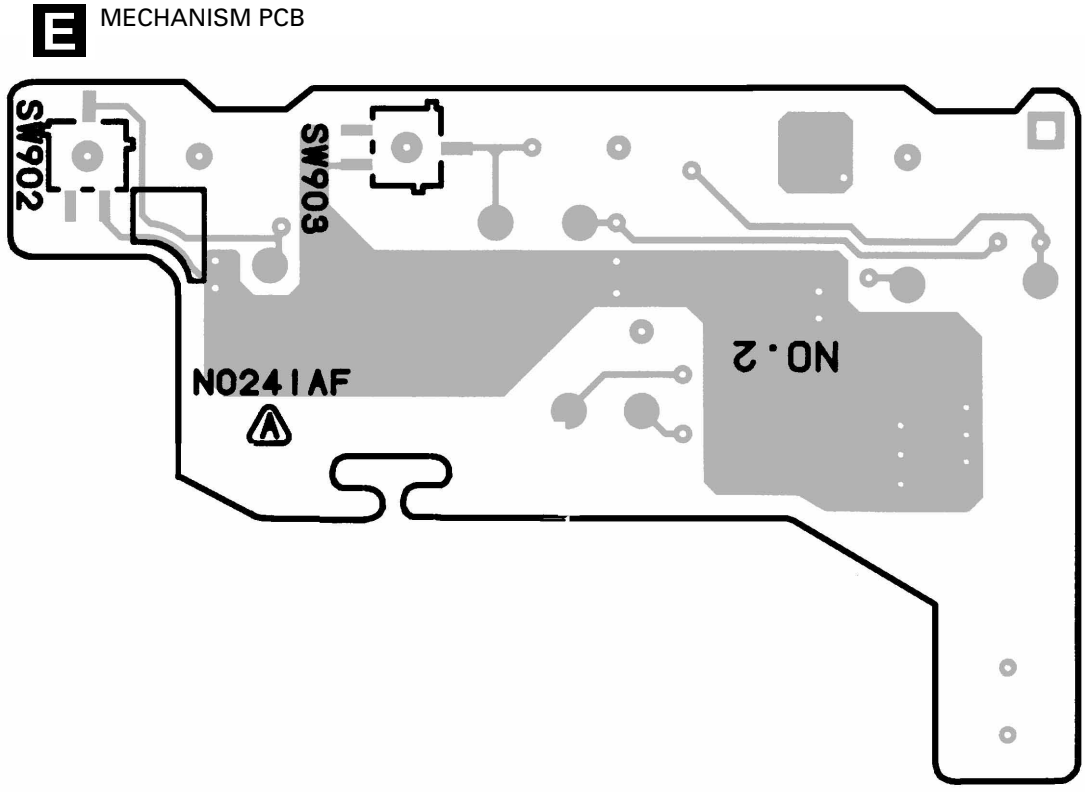
4.4 SWITCH PCB



4.5 MECHANISM PCB

SIDE A





SIDE B

5. ELECTRICAL PARTS LIST

NOTES:

- Parts whose parts numbers are omitted are subject to being not supplied.
- The part numbers shown below indicate chip components.

Chip Resistor

RS1/○S○○○J,RS1/○○S○○○J

Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

A Unit Number:CWM6669
Unit Name :Audio Control Unit

MISCELLANEOUS

=====Circuit Symbol and No.		===Part Name	Part No.
IC	151	IC	M51304L
IC	152	IC	NJM4558MD
IC	153	IC	NJM4558MD
IC	154	IC	NJM4558MD
IC	155	IC	NJM4558MD
IC	156	IC	NJM4558MD
IC	157	IC	TC4051BP1
IC	351	IC	TA2050S
IC	352	IC	CA0008AM
IC	353	IC	BA3129
IC	601	IC	PD4880B
IC	602	IC	S-80734AN
Q	201	Transistor	2SD2396
Q	202	Transistor	DTA114EK
Q	203	Transistor	DTC124EK
Q	351	Transistor	2SC2412K
Q	352	Transistor	DTC314TK
Q	353	Transistor	DTC314TK
Q	354	Transistor	DTA124ES
Q	356	Transistor	DTC114ES
Q	358	Transistor	DTC124EK
Q	601	Transistor	DTC124EK
Q	602	Transistor	2SA1037K
Q	801	Transistor	2SD1859
Q	802	Transistor	2SC2412K
Q	803	Transistor	2SC2412K
Q	804	Transistor	2SA1037K
Q	805	Transistor	DTC114EK
Q	806	Transistor	2SD2395
Q	851	Transistor	2SA1037K
Q	852	Transistor	DTC124EK
Q	853	Transistor	DTC124EK
Q	854	Transistor	2SD1189
Q	856	Transistor	2SB1243
Q	857	Transistor	DTC124EK
D	151	Diode	1SS133
D	152	Diode	1SS133
D	153	Diode	1SS133
D	154	Diode	1SS133
D	155	Diode	1SS133
D	156	Diode	1SS133
D	157	Diode	1SS133
D	158	Diode	1SS133
D	159	Diode	1SS133
D	160	Diode	1SS133
D	161	Diode	HZS6L(A1)
D	201	Diode	HZS7L(A3)
D	351	Diode	1SS133
D	352	Diode	1SS133
D	601	Diode	1SS133

=====Circuit Symbol and No.		===Part Name	Part No.
D	801	Diode	ERA15-02VH
D	802	Diode	ERA15-02VH
D	803	Diode	HZS6L(B1)
D	804	Diode	ERA15-02VH
D	805	Diode	HZS7L(C2)
D	806	Diode	HZS9L(B2)
D	851	Diode	HZS6L(B2)
D	852	Diode	HZS9L(C2)
L	201	Ferri-Inductor	LAU2R2K
L	351	Ferri-Inductor	LAU2R2K
L	601	Ferri-Inductor	LAU2R2K
L	801	Choke Coil 1.4mH	CTH1129
X	601	Ceramic Resonator 6.29MHz	CSS1310
EF	201	EMI Filter	CCG1006

RESISTORS

R	151		RS1/10S683J
R	152		RS1/10S683J
R	153		RS1/10S102J
R	154		RS1/10S103J
R	155		RS1/10S560J
R	156		RD1/4PU102J
R	157		RS1/10S102J
R	158		RS1/10S682J
R	159		RS1/10S473J
R	160		RS1/10S473J
R	161		RS1/10S122J
R	162		RS1/10S124J
R	163		RD1/4PU303J
R	164		RS1/10S225J
R	165		RS1/10S132J
R	166		RS1/10S134J
R	167		RS1/10S333J
R	168		RS1/10S225J
R	169		RS1/10S162J
R	170		RS1/10S164J
R	171		RS1/10S393J
R	172		RS1/10S225J
R	173		RS1/10S112J
R	174		RS1/10S114J
R	175		RS1/10S273J
R	176		RS1/10S225J
R	177		RS1/10S152J
R	178		RS1/10S154J
R	179		RD1/4PU363J
R	180		RS1/10S225J
R	181		RS1/10S182J
R	182		RS1/10S224J
R	183		RS1/10S563J
R	184		RS1/10S225J
R	185		RS1/10S272J
R	186		RS1/10S224J
R	187		RS1/10S623J
R	188		RS1/10S225J
R	189		RS1/10S512J
R	190		RS1/10S474J

=====Circuit Symbol and No.		===Part Name	Part No.
R	191		RS1/10S124J
R	192		RS1/10S225J
R	193		RD1/4PU223J
R	194		RS1/10S223J
R	195		RD1/4PU104J
R	196		RS1/10S563J
R	197		RS1/10S103J
R	198		RS1/10S223J
R	201		RS1/10S221J
R	202		RS1/8S221J
R	203		RS1/10S221J
R	204		RS1/8S221J
R	205		RS1/10S221J
R	206		RD1/4PU221J
R	207		RD1/4PU162J
R	351		RD1/4PU821J
R	352		RD1/4PU821J
R	353		RD1/4PU181J
R	354		RD1/4PU181J
R	355		RD1/4PU223J
R	356		RD1/4PU223J
R	357		RD1/4PU102J
R	358		RD1/4PU102J
R	359		RD1/4PU101J
R	360		RD1/4PU101J
R	362		RS1/10S102J
R	363		RS1/10S102J
R	364		RS1/10S473J
R	365		RS1/10S473J
R	366		RS1/10S473J
R	367		RS1/10S473J
R	368		RS1/10S473J
R	369		RS1/10S473J
R	370		RS1/10S123J
R	371		RS1/10S123J
R	372		RS1/10S123J
R	373		RS1/10S123J
R	374		RS1/10S104J
R	375		RS1/10S473J
R	376		RS1/10S473J
R	377		RS1/10S473J
R	378		RS1/10S332J
R	379		RS1/10S332J
R	380		RD1/4PU103J
R	381		RS1/10S473J
R	382		RS1/10S473J
R	383		RS1/10S102J
R	601		RS1/10S124J
R	602		RS1/10S473J
R	603		RS1/8S473J
R	604		RS1/10S473J
R	605		RS1/10S473J
R	606		RS1/10S473J
R	608		RS1/8S473J
R	609		RD1/4PU102J
R	610		RS1/10S103J
R	611		RD1/4PU103J
R	612		RS1/10S102J
R	613		RS1/10S102J
R	614		RS1/10S102J
R	615		RS1/10S102J
R	616		RS1/10S102J
R	619		RS1/10S102J
R	620		RS1/10S473J
R	621		RS1/10S473J

=====Circuit Symbol and No.		===Part Name	Part No.
R	622		RS1/10S473J
R	623		RS1/10S473J
R	624		RS1/10S473J
R	625		RD1/4PU221J
R	626		RD1/4PU473J
R	627		RS1/10S473J
R	630		RD1/4PU221J
R	631		RD1/4PU221J
R	634		RD1/4PU473J
R	635		RD1/4PU473J
R	638		RD1/4PU221J
R	639		RD1/4PU221J
R	640		RS1/10S473J
R	641		RD1/4PU473J
R	644		RS1/10S473J
R	645		RS1/10S473J
R	646		RS1/10S473J
R	647		RS1/10S102J
R	648		RD1/4PU102J
R	649		RD1/4PU102J
R	650		RD1/4PU102J
R	651		RS1/10S473J
R	801		RS1/10S101J
R	802		RS1/10S622J
R	804		RS1/10S103J
R	805		RS1/10S473J
R	806		RS1/10S473J
R	807		RS1/10S223J
R	808		RS1/10S473J
R	809		RS1/10S473J
R	810		RD1/4PU751J
R	851		RS1/10S473J
R	852		RS1/10S473J
R	853		RD1/4PU471J
R	856		RS1/10S1R0J
R	859		RS1/10S473J
R	860		RS1/10S472J
R	863		RS1PMF560J

CAPACITORS

C	151		CEJA1R0M50
C	152		CEJA1R0M50
C	153		CKSQYB103K25
C	154		CEAL330M10
C	155		CEJA1R0M50
C	156		CEAL101M10
C	157		CKSQYB102K50
C	158		CEALR47M50
C	159		CEAL100M16
C	160		CEJANP100M10
C	161		CEAL470M10
C	162		CKSQYB103K25
C	163		CKSQYB821K50
C	164		CKSQYB821K50
C	165		CKSQYB104K16
C	166		CKSQYB152K50
C	167		CKSQYB152K50
C	168		CKSQYB104K16
C	169		CKSQYB332K50
C	170		CKSQYB332K50
C	171		CKSQYB104K16
C	172		CKSQYB123K25
C	173		CKSQYB123K25
C	174		CKSQYB104K16
C	175		CKSQYB223K25

=====Circuit Symbol and No.		===Part Name	Part No.
C	176		CKSQYB223K25
C	177		CKSQYB104K16
C	178		CKSQYB393K25
C	179		CKSQYB393K25
C	180		CKSQYB104K16
C	181		CKSQYB823K25
C	182		CKSQYB823K25
C	183		CKSQYB104K16
C	184		CKSQYB823K25
C	185		CKSQYB823K25
C	186		CKSQYB104K16
C	187		CEAL4R7M16
C	188		CCSQCH391J50
C	201		CCSQCH101K50
C	202		CCSQCH101K50
C	203		CKSQYB473K16
C	204		CEAL101M10
C	251		CCSQCH391J50
C	252		CCSQCH391J50
C	351		CEJA100M16
C	352		CEJA100M16
C	353		CEJA1R0M50
C	354		CEJA1R0M50
C	355		CEJA1R0M50
C	356		CEJA1R0M50
C	357		CEJA100M16
C	358		CEJA100M16
C	359		CKSYB104K16
C	360		CKSQYB102K50
C	361		CEJA1R0M50
C	362		CEJA1R0M50
C	363		CEJA100M16
C	364		CEJA100M16
C	365		CEJA100M16
C	366		CEJA100M16
C	367		CCSQCH391J50
C	368		CCSQCH391J50
C	601		CEJA2R2M50
C	602		CKSQYB102K50
C	603		CEJA4R7M35
C	606		CKSQYB103K50
C	607		CKSQYB103K50
C	608		CKSQYB102K50
C	609		CKSQYB104K16
C	801	1500µF/16V	CCH1201
C	802		CKSQYB473K25
C	803	1000µF/16V	CCH1185
C	804		CKSQYB103K50
C	805		CEJA470M10
C	806		CKSYB105K16
C	807		CEJA100M16
C	808		CKSQYB473K25
C	809		CEJA101M10
C	810		CKSQYB473K25
C	851		CKSQYB103K25

=====Circuit Symbol and No.		===Part Name	Part No.

B Unit Number :CWM6451
Unit Name :Keyboard Unit

MISCELLANEOUS

IC	901	IC	LC7582E
IC	902	IC	LC7582E
Q	901	Transistor	2SC2412K
D	901	Diode	MA3056(M)
D	902	LED	CL170UBX
D	903	LED	CL220PGC
D	904	LED	CL170PGCD
D	905	LED	CL170PGCD
D	906	LED	CL170PGCD
D	907	LED	CL170PGCD
D	908	LED	CL220PGC
D	909	LED	NSSW440-8063
D	910	LED	NSSW440-8063
D	911	LED	NSSW440-8063
D	912	LED	NSSW440-8063
D	913	LED	NSSW440-8063
D	914	LED	NSSW440-8063
D	915	LED	CL170PGCD
S	901	Switch(EJECT)	CSG1061
S	902	Switch(DISPLAY)	CSG1061
S	903	Switch(RESET)	CSG1043
LCD	901	LCD	CAW1534

RESISTORS

R	901	RS1/10S102J
R	902	RS1/10S102J
R	903	RS1/10S102J
R	904	RS1/10S102J
R	905	RS1/10S102J
R	906	RS1/10S152J
R	907	RS1/10S104J
R	908	RS1/10S104J
R	909	RS1/10S102J
R	910	RS1/10S102J
R	911	RS1/10S203J
R	912	RS1/8S182J
R	913	RS1/8S182J
R	914	RS1/8S681J
R	915	RS1/8S681J
R	916	RS1/8S681J
R	917	RS1/8S681J
R	919	RS1/8S471J
R	920	RS1/8S471J
R	921	RS1/8S561J
R	922	RS1/8S561J
R	923	RS1/8S561J
R	924	RS1/8S561J
R	925	RS1/8S561J
R	926	RS1/8S561J
R	927	RS1/8S561J
R	928	RS1/8S561J
R	929	RS1/8S561J
R	930	RS1/8S561J
R	931	RS1/8S561J
R	932	RS1/8S561J

CAPACITORS

C	901	CKSQYB473K16
C	902	CEV100M16
C	903	CCSQCH331J50
C	904	CCSQCH331J50
C	905	CKSQYB473K16

=====Circuit Symbol and No.		===Part Name	Part No.
C	906		CKSQYB473K16
C	907		CKSQYB104K50
C	908		CKSQYB104K50
C	909		CKSQYB104K50
C	910		CKSQYB104K50
C	911		CKSQYB104K50
C	912		CKSQYB104K50
C	913		CKSQYB104K50

C Unit Number:1246840289 Unit Name :Main PCB

MISCELLANEOUS

IC	101	IC	1245730345
IC	201	IC	1245730449
IC	202	IC	1245730502
IC	301	IC	1245730310
IC	302	IC	TC74VHC125FT
IC	303	IC	1245730310
IC	305	IC	TC7SH08F
IC	306	IC	TC7SH08F
IC	401	IC	1245730513
IC	402	IC	1245730376
IC	403	IC	1245730309
IC	501	IC	1245730515
IC	601	IC	BA5985FM
IC	801	IC	1245730444
IC	811	IC	NJM2904V
IC	861	IC	1245730311
Q	401	Transistor	DTC144EE
Q	402		1245760006
Q	403	Transistor	DTA114TE
Q	703	Transistor	2SA1037K
Q	704	Transistor	DTC114EE
Q	705	Transistor	2SC4213
Q	706	Transistor	2SC4213
Q	801	Transistor	1245760001
Q	802	FET	2SK1830
Q	821	Transistor	2SA1244LB
Q	822	Transistor	2SC4081
Q	841	Transistor	2SA1244LB
Q	842	Transistor	2SC4081
D	701	Diode	1115700031
L	101	Inductor	1246140017
L	201	Inductor	1246140016
L	202	Inductor	1306140318
L	501	Inductor	1246140016
L	600	Inductor	1246120014
L	801	Inductor	1246140014
L	842	Inductor	1246120002
XL	201	Ceramic Resonator 33.868MHz	1245790011
XL	401	Ceramic Resonator 5.64MHz	1245790006

RESISTORS

R	101		RS1/16SS104J
R	102		RS1/16SS563J
R	111		RS1/16SS223J
R	112		RS1/16SS223J
R	113		RS1/16SS223J
R	114		RS1/16SS223J
R	131		RS1/16SS1R0J
R	132		RS1/16SS103J
R	161		RS1/16SS122J
R	204		RS1/16SS102J
R	222		RS1/16SS105J
R	303		RS1/16SS103J
R	304		RS1/16SS332J
R	305		RS1/16SS473J
R	306		RS1/16SS681J
R	307		RS1/16SS681J
R	308		RS1/16SS681J
R	309		RS1/16SS681J
R	310		RS1/16SS681J
R	311		RS1/16SS102J
R	312		RS1/16SS102J
R	351		RS1/16SS681J
R	352		RS1/16SS101J
R	403		RS1/16SS223J
R	404		RS1/16SS223J
R	406		RS1/16SS223J
R	407		RS1/16SS223J
R	408		RS1/16SS223J
R	409		RS1/16SS223J
R	411		RS1/16SS104J
R	412		RS1/16SS103J
R	413		RS1/16SS102J
R	414		RS1/16SS102J
R	415		RS1/16SS102J
R	431		RS1/16SS104J
R	432		RS1/16SS104J
R	433		RS1/16SS104J
R	441		RS1/16SS102J
R	442		RS1/16SS102J
R	443		RS1/16SS102J
R	444		RS1/16SS102J
R	445		RS1/16SS102J
R	446		RS1/16SS102J
R	448		RS1/16SS103J
R	601		RS1/16SS103J
R	610		RS1/16SS123J
R	611		RS1/16SS123J
R	614		RS1/16SS682J
R	616		RS1/16SS682J
R	622		RS1/16SS103J
R	624		RS1/16SS103J
R	628		RS1/16SS822J
R	629		RS1/16SS822J
R	630		RS1/16SS104J
R	631		RS1/16SS104J
R	634		RS1/16SS104J
R	636		RS1/16SS104J
R	638		RS1/16SS104J
R	640		RS1/16SS104J
R	642		RS1/16SS823J
R	644		RS1/16SS823J
R	713		RS1/16SS104J
R	714		RS1/16SS104J
R	717		RS1/16SS561J
R	718		RS1/16SS561J
R	719		RS1/16SS102J
R	720		RS1/16SS102J
R	801		RS1/16SS223J
R	802		RS1/16SS471J
R	803		1245810051
R	804		1305810059
R	805		1245810088
R	806		1245810090
R	807		RS1/16SS473J
R	808		1245810098
R	821		1245810091
R	822		RS1/16SS101J
R	823		1245810087

=====Circuit Symbol and No.		===Part Name	Part No.
R	824		1245810050
R	828		1245810082
R	841		1245810091
R	842		RS1/16SS101J
R	843		1245810087
R	844		1245810050
R	848		1245810082

CAPACITORS

C	101		CSZS100M10
C	102		CKSQYB105K16
C	103		CKSQYB105K16
C	104		CKSQYB104K25
C	106		CKSQYB224K16
C	107		CKSRYB123K25
C	109		CKSYB475K10
C	110		CKSQYB224K16
C	112		CKSRYB332K50
C	113		CKSRYB333K16
C	114		CCSRCH331J50
C	121		CCSRCH271J50
C	122		CCSRCH271J50
C	123		CCSRCH391J50
C	124		CCSRCH391J50
C	165		CKSRYB333K16
C	166		CKSYB475K10
C	201		CSZSR330M10
C	202		CSZS100M10
C	203		CKSRYB104K16
C	204		CKSRYB104K16
C	205		CKSQYB105K16
C	301		CKSRYB104K16
C	302		CKSRYB104K16
C	303		CKSRYB104K16
C	305		CKSRYB104K16
C	306		CKSRYB104K16
C	307		CKSQYB224K16
C	401		CKSQYB105K16
C	402		CKSYB105K16
C	403		CKSQYB105K16
C	405		CKSRYB104K16
C	501		1245900059
C	502		CKSYB105K16
C	503		CSZS100M10
C	504		CSZS100M10
C	505		CSZS100M10
C	600		1245920021
C	601		CKSYB105K16
C	603		CKSQYB105K16
C	610		CCSRSL681J50
C	611		CCSRSL681J50
C	612		CKSRYB122K50
C	613		CKSRYB122K50
C	616		CKSRYB562K50
C	617		CKSRYB562K50
C	620		CKSRYB223K25
C	621		CKSRYB223K25
C	705		CSZS100M10
C	706		CSZS100M10
C	707		CCSRCH151J50
C	708		CCSRCH151J50
C	801		CKSYB105K16
C	802		CKSRYB104K16
C	803		CKSYB105K16
C	804		1245900058
C	805		CKSYB105K16

=====Circuit Symbol and No.		===Part Name	Part No.
C	806		1245900059
C	807		CKSYB105K16
C	808		CKSQYB184K16
C	810		CKSRYB103K25
C	821		CCSRSL681J50
C	824		1245900003
C	825		1245900059
C	826		1245900059
C	827		CCSRCH151J50
C	840		CKSYB105K16
C	841		CCSRSL681J50
C	842		CCSRCH151J50
C	843		CKSQYB224K16
C	844		1245900059
C	846		1245900059
C	847		1245900059
C	861		CKSYB105K16
C	862		1245900058

E Unit Number:1246840251
Unit Name :Mechanism PCB

SW	901	Spring Switch(LEAD)	CSN1033
SW	902	Switch(DISC ID)	1245300030
SW	903	Switch(DISK IN)	1245300030
R	901		RS1/16SS104J
R	902		RS1/16SS333J
R	903		RS1/16SS104J
C	901		CKSYB105K16
C	902		CKSYB105K16

D Unit Number:1246840145
Unit Name :Switch PCB

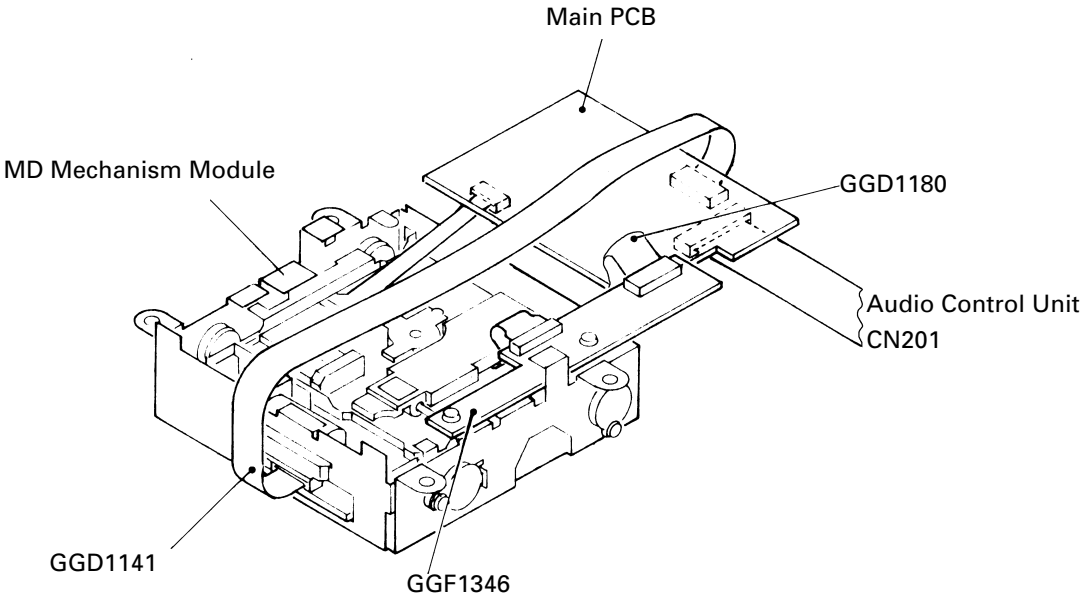
SW	651	Switch(LOAD END)	1305301313
SW	652	Switch(LOAD START)	1305301313
SW	653	Switch(EJECT END)	1305301313

Miscellaneous Parts List

M	651	Motor(LOADING)	1246300043
M	901	Motor(SLIDE)	1246300073
M	902	Motor(SPINDLE)	1246300069
		Optical Pickup Assy	1246170028

6. ADJUSTMENT

6.1 MD MECHANISM MODULE ADJUSTMENT



● About test disc

Use a low reflection disc (MMD-211) for preliminary auto tuning (AUTO1).
Use a high reflection disc (MMD-110), low reflection disc (MMD-211) for ATT auto tuning (AUTO2).
Disc No. : TEAC MMD-211B or MMD-212B
Tool No. : GGF1328

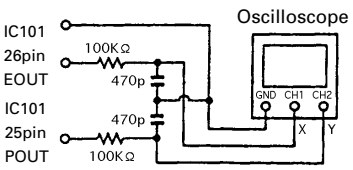
1. Be sure to perform "preliminary auto tuning" when you exchanged a PCB, Mechanism Unit, or Pickup Unit.

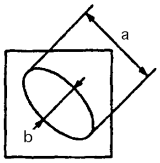
2. Let TP421 and TP435 (IC402: pin6, pin8) short circuited before preliminary auto tuning or overwriting EE-PROM (IC402) to clear protection on EE-PROM.
   * To overwrite EE-PROM, please see page 9 of the CX-893 Service Manual.

● How to tune optical pick up grating

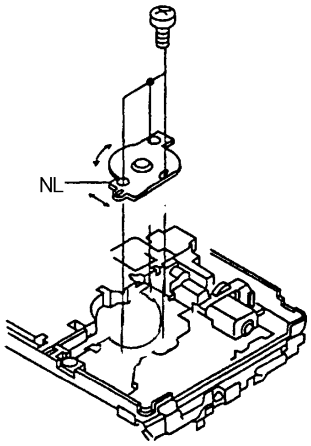
Adjust Lissajous' figure (x-y) of EOUT (TP131) to FOUT (TP130) after automatically adjusting in a test mode AUTO2 using a high reflection disc.

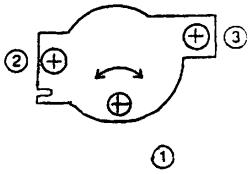
1. Loosen the three screws of the spinning motor and adjust checking Lissajous' figure.
2. After the tuning is completed, tighten the screws ①, ②, and ③, in that order.
3. Check Lissajous' figure again.





Lissajous' figure
Within the range a:b = 3:1

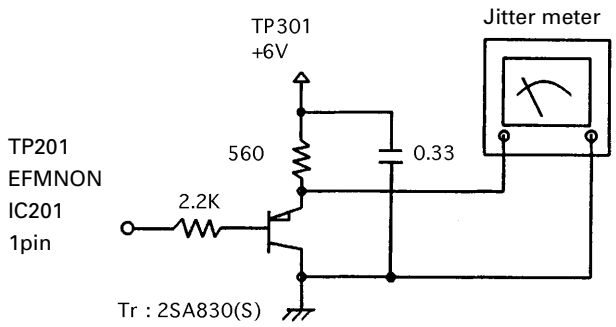




Check Lissajous' figure while shifting positions to which the spinning motor is mounted.

● **About tuning of jitter and how to tune it**

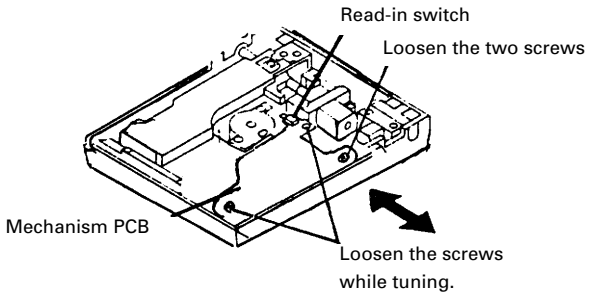
Use the following circuit as a tool to measure jitter.



Check jitter value of EFM with the step continuous play in TESTPLAY mode after automatically tuning in a test mode AUTO2 (ATT auto tuning) using a low reflection disc.

● **How to tune the position of read-in switch**

Check the sub code cluster value of the position of read-in switch in INNER mode. If the SUBQ value is outside the range between FF85 and FFD2, tighten the screws by shifting the mechanism PCB to the directions indicated with the arrow in the figure below, and then check the sub code cluster value of the position of read-in switch again.



7. GENERAL INFORMATION

7.1 DIAGNOSIS

7.1.1 TEST MODE

During the test mode, this unit can be controlled with an MD control unit (e.g. KEH-P7000/UC) combined with it. In each test mode, the operation buttons in the MD control unicombined should be used to operate. In the following descriptions on the test mode operations, the KEH-P7000/UC's operation button name are used.

● How to enter the test mode

When combining a 1994 spring model (ex. KEH-P7000/UC) with this unit, short the jumper wires JP42 and JP43 on the Audio control unit. While pressing the buttons 4 and 6 simultaneously, turn on the ACC and Back-up.

When combining one of the other generation models with this unit, turn on the ACC and Back-up while pressing the buttons 4 and 6 simultaneously.

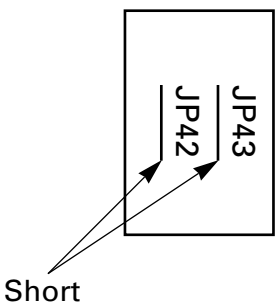
● How to cancel the test mode

When combining a 1994 spring model (ex. KEH-P7000/UC) with this unit, turn off the ACC and Back-up, then remove the short-circuit between the jumper wires JP42 and JP43 on the Audio control unit.

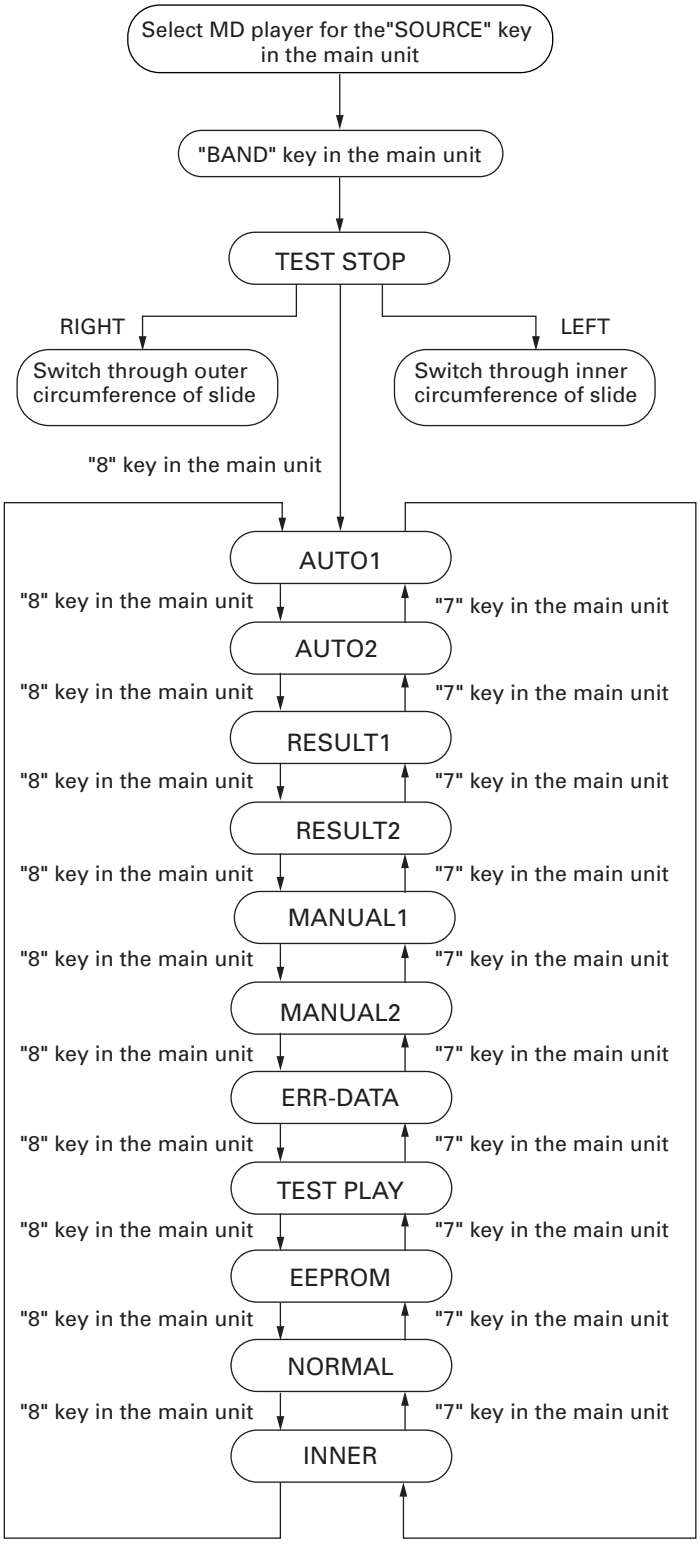
When combining one of the other generation models with this unit, turn off the ACC and Back-up.

AUDIO CONTROL UNIT

FOR TEST MODE



● Menus in Test Mode



: STOP test mode

: Preliminary auto tuning menu

: ATT auto tuning checking menu

: Preliminary auto tuning checing menu

: ATT auto tuning checking menu

: Preliminary manual tuning menu

: ATT manual tuning menu

: Error history displaying menu

: Continuous playing menu

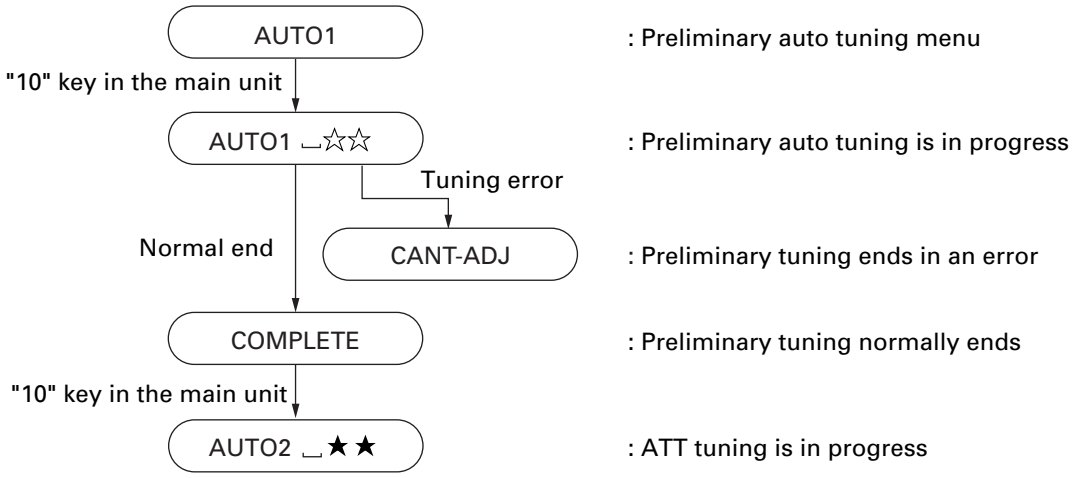
: EEPROM setting menu

: Test mode normal playing menu

: INNER switch position measuring menu

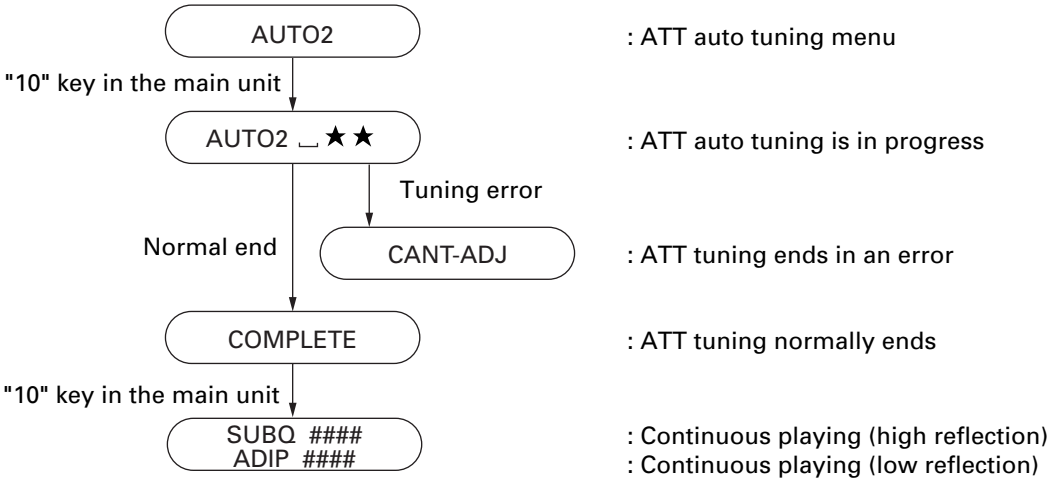
* Pressing "9" key in the main unit in each status switches to "TEST STOP" .

● Preliminary auto tuning



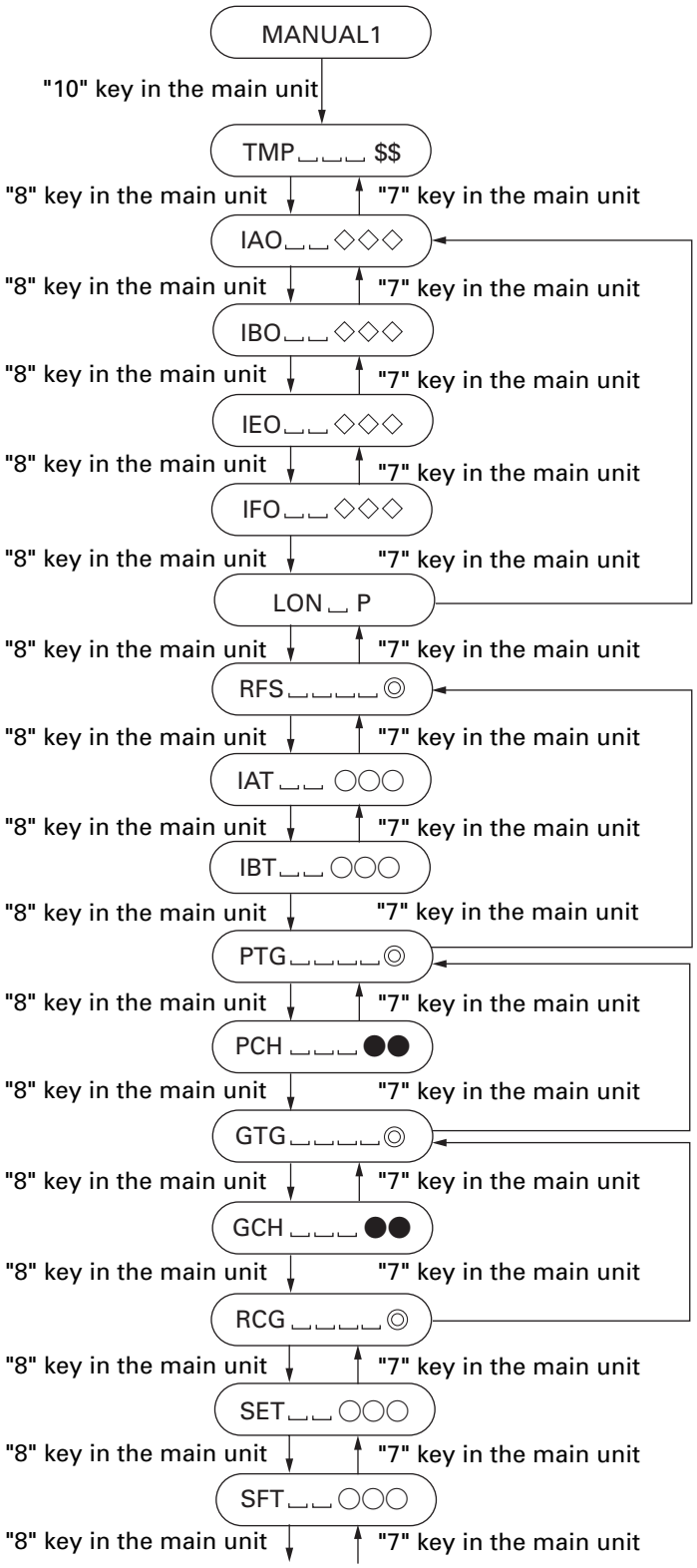
* Pressing "9" key in the main unit in each status switches to "TEST STOP" .
* "☆☆" is one of the following tuning numbers:
  - 00 : Switch through most inner circumference
  - 02 : Tentative measurement of ABEF offset
  - 04 : Rough tuning of RF side focus gain
  - 05 : Tentative setting of focus ATT
  - 06 : Tuning of tracking gain in RF side pit part
  - 07 : COUT level setting for tuning pit part
  - 08 : Switch through outer circumference
  - 09 : Tuning of tracking gain in RF side groove part
  - 10 : COUT level setting for tuning groove part
  - 11 : Tuning of RF side TCRS gain
  - 12 : Initial setting of tracking ATT
  - 13 : Fine tuning of RF side focus gain
  - 14 : Initial setting of focus ATT
  - 15 : Measurement of S gain "High" ABEF offset
  - 16 : Measurement of TCRS offset
  - 17 : Measurement of S gain "Low" ABEF offset

● **ATT auto tuning**



* Pressing "9" key in the main unit in each status switches to "TEST STOP" .
* " ★★ " is one of the following tuning numbers:
  - 00 : Switch through most inner circumference
  - 03 : ATT setting of tracking in pit part
  - 04 : ATT setting of focus in pit part
  - 06 : Switch through outer circumference (low reflection only)
  - 07 : ATT setting of TCRS (low reflection only)
  - 08 : ATT setting of tracking in groove part (low reflection only)
  - 09 : ATT setting of focus in groove part (low reflection only)

● Preliminary manual tuning



: Preliminary manual tuning menu

: Temperature code display
$$: Temperature code

: Tentative setting of A signal offset (AINO)
◇◇◇ : Measured value

: Tentative setting of B signal offset (BINO)
◇◇◇ : Measured value

: Tentative setting of E signal offset (EINO)
◇◇◇ : Measured value

: Tentative setting of F signal offset (FINO)
◇◇◇ : Measured value

: Laser power on (Play power on)

: Rough tuning of RF side focus gain
◎ : Setting value of gain

: A-ATT (Focus) tentative setting
○○○ : ATT setting value

: B-ATT (Focus) tentative setting
○○○ : ATT setting value

: Tuning of tracking gain in RF side pit part
◎ : Setting value of gain

: COUT level setting for tuning pit part
●● : Setting value of COUT level

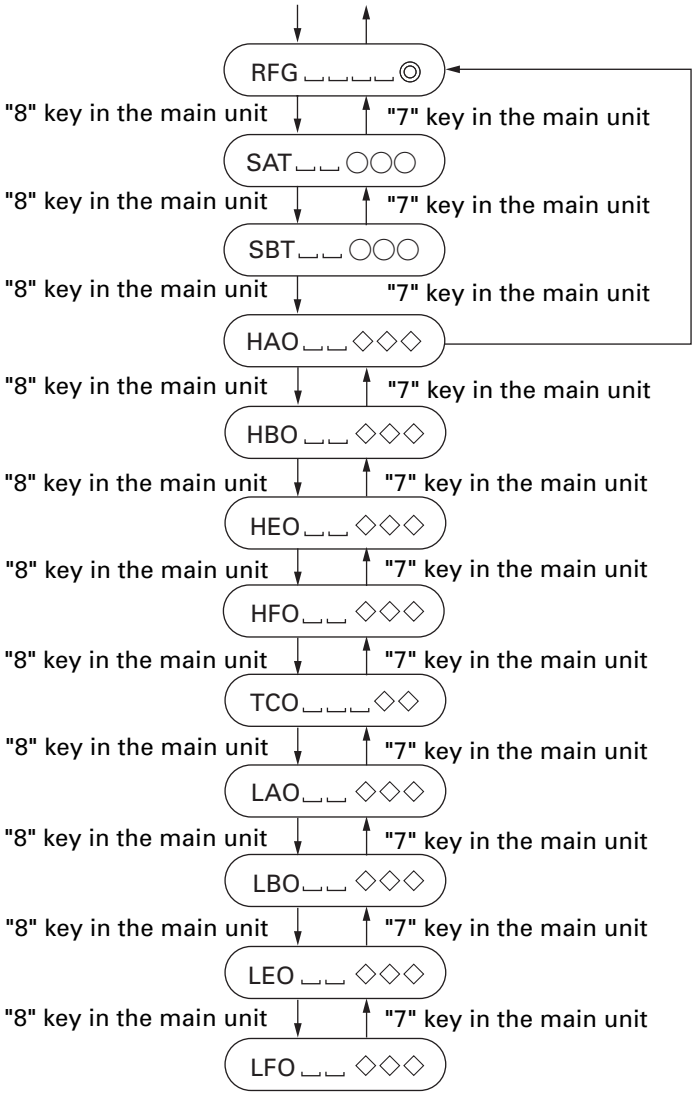
: Tuning of tracking gain in RF side grove part
◎ : Setting value of gain

: COUT level setting for tuning grove part
●● : Setting value of COUT level

: Tuning of RF side TCRS gain
◎ : Setting value of gain

: E-ATT (Tracking) initial setting
○○○ : ATT setting value

: F-ATT (Tracking) initial setting
○○○ : ATT setting value



: Fine tuning of RF side focus gain
◎ : Setting value of gain

: A-ATT (Focus) initial setting
○○○ : ATT setting value

: B-ATT (Focus) initial setting
○○○ : ATT setting value

: Measurement of S gain "High" A signal offset (AINO)
◇◇◇ : Measured value

: Measurement of S gain "High" B signal offset (BINO)
◇◇◇ : Measured value

: Measurement of S gain "High" E signal offset (EINO)
◇◇◇ : Measured value

: Measurement of S gain "High" F signal offset (FINO)
◇◇◇ : Measured value

: Measurement of TCRS signal offset (TCRSO)
◇◇ : Measured value

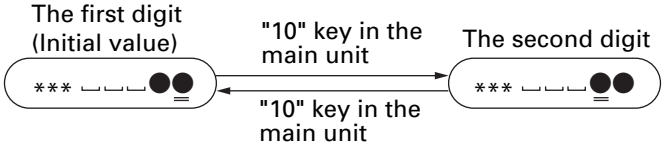
: Measurement of S gain "Low" A signal offset (AINO)
◇◇◇ : Measured value

: Measurement of S gain "Low" B signal offset (BINO)
◇◇◇ : Measured value

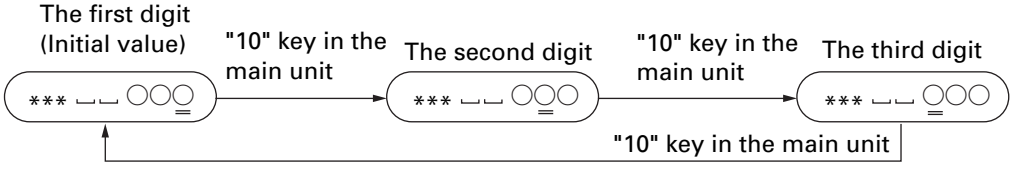
: Measurement of S gain "Low" E signal offset (EINO)
◇◇◇ : Measured value

: Measurement of S gain "Low" F signal offset (FINO)
◇◇◇ : Measured value

* Pressing "9" key in the main unit in each status switches to "TEST STOP" .
* Pressing "10" key in the main unit in each status where a setting value is displayed changes the digit of the setting value that will be changed.
• When the setting value has two digits.

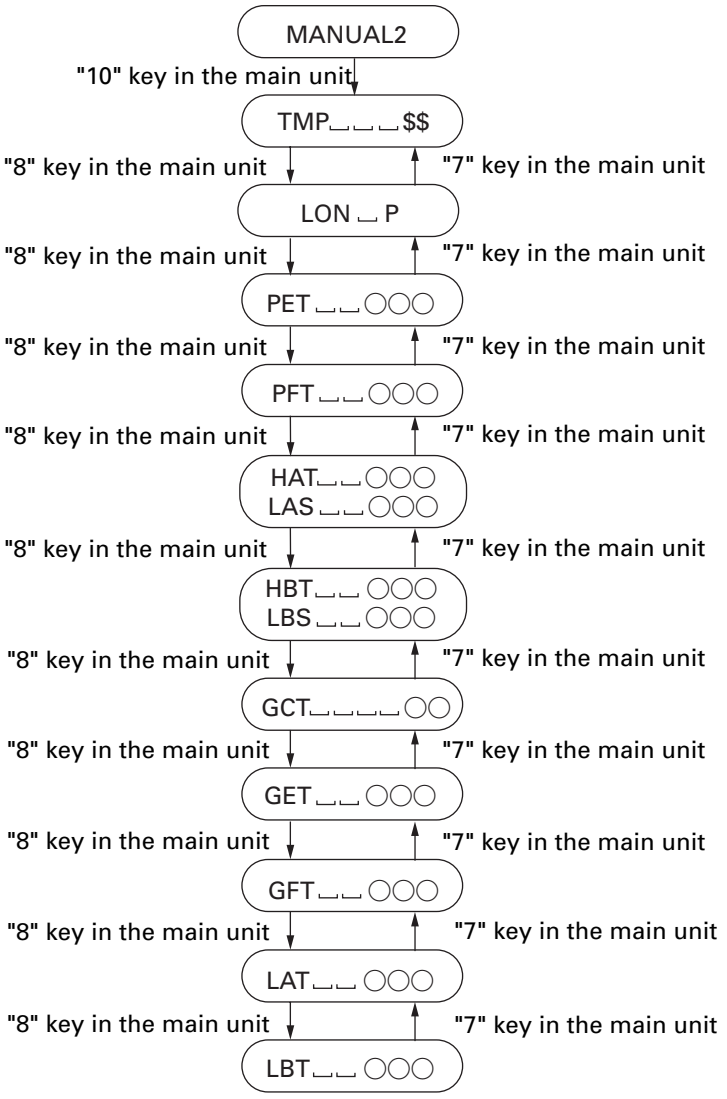


• When the setting value has three digits.


The first digit
(Initial value)
"10" key in the main unit
The second digit
"10" key in the main unit
The third digit
*** ␣␣ ○○○
"10" key in the main unit

* Pressing VOL UP/DOWN key in each status where a setting value is displayed changes the value in the digit you selected in the range from 0H through FH. However, the setting value of RF side gain changes in the range from 0H through 6H.

● ATT manual tuning



: ATT manual tuning menu

: Temperature code display
$$: Temperature code

: Laser power on (Play power on)

: E-ATT (Tracking) setting of pit part
○○○ : ATT setting value

: F-ATT (Tracking) setting of pit part
○○○ : ATT setting value

: Setting of high reflection A-ATT (Focus)
: Setting of low reflection A-ATT (Focus)
○○○ : ATT setting value

: Setting of high reflection B-ATT (Focus)
: Setting of low reflection B-ATT (Focus)
○○○ : ATT setting value

: ATT setting of TCRS
○○ : ATT setting value

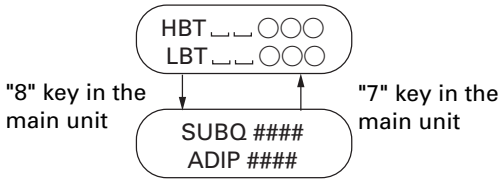
: Setting of E-ATT (Tracking) in groove part
○○○ : ATT setting value

: Setting of F-ATT (Tracking) in groove part
○○○ : ATT setting value

: Setting of low reflection A-ATT (Focus)
○○○ : ATT setting value

: Setting of low reflection B-ATT (Focus)
○○○ : ATT setting value

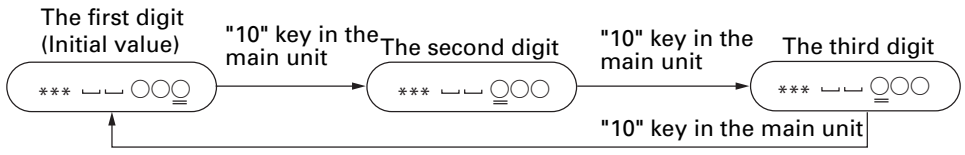
* Pressing "9" key in the main unit in each status switches to "TEST STOP" status.
* Pressing "10" key in the main unit in the B-ATT setting status switches to continuous play.
Pressing "10" key in the main unit in the continuous playing status switches to the B-ATT setting status in the ATT manual tuning.



: Setting of high reflection B-ATT (Focus) in pit part
: Setting of low reflection B-ATT (Focus) in pit part
: Setting of low reflection B-ATT (Focus) in groove part
○○○ : ATT setting value

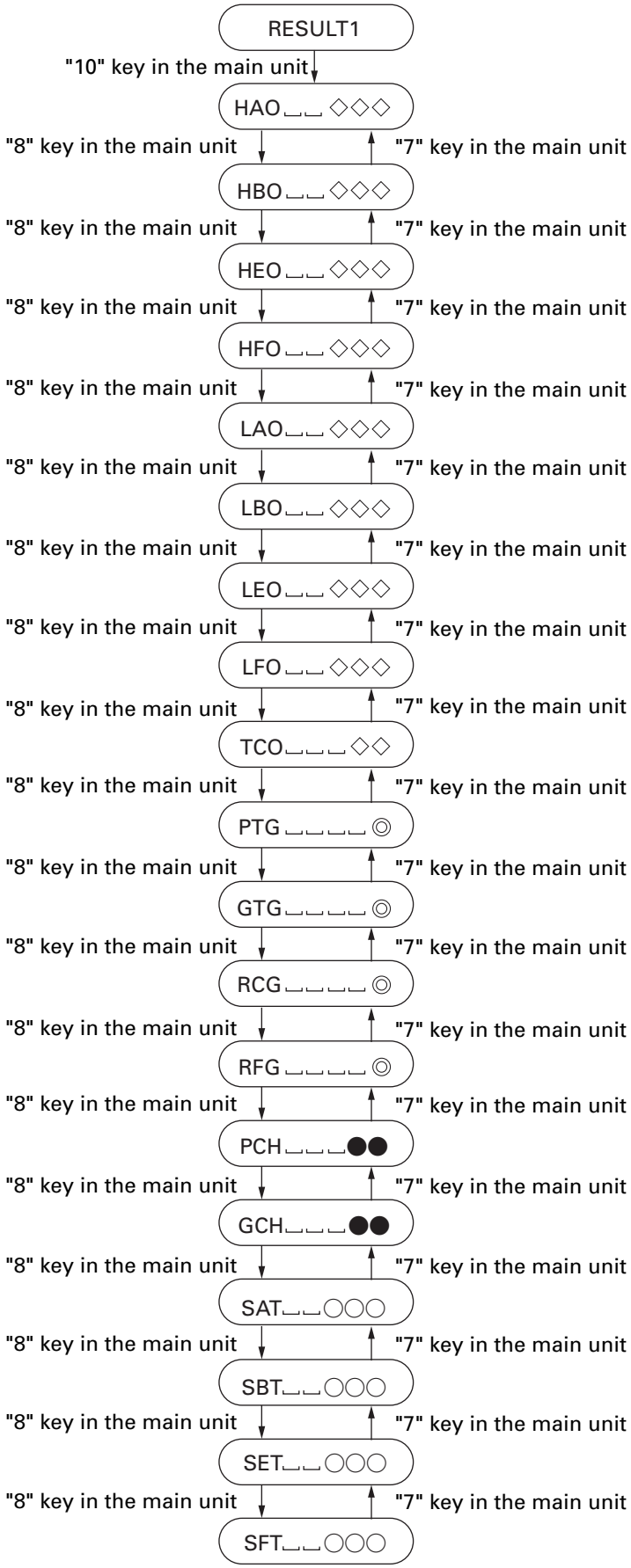
: Continuous play (pit part)
: Address

* Pressing "10" key in the main unit in each status where a setting value is displayed changes the digit of the setting value that will be changed.



* Pressing RIGHT/LEFT key in each status where a setting value is displayed changes the value in the digit you selected in the range from 0_H through F_H.

● Checking preliminary tuned value



: Preliminary tuning checking menu

: Measured value of S gain "High" A signal offset (Setting value)

: Measured value of S gain "High" B signal offset (Setting value)

: Measured value of S gain "High" E signal offset (Setting value)

: Measured value of S gain "High" F signal offset (Setting value)

: Measured value of S gain "Low" A signal offset (Setting value)

: Measured value of S gain "Low" B signal offset (Setting value)

: Measured value of S gain "Low" E signal offset (Setting value)

: Measured value of S gain "Low" F signal offset (Setting value)

: Measured value of TCRS signal offset

: Measured value of tracking gain in RF side pit part

: Measured value of tracking gain in RF side groove part

: Measured value of RF side TCRS gain

: Measured value of RF side focus gain

: Setting value of COUT level for tuning pit part

: Setting value of COUT level for tuning groove part

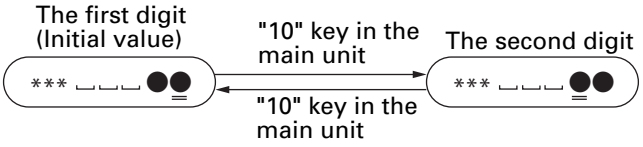
: Initial value of A-ATT (Focus)

: Initial value of B-ATT (Focus)

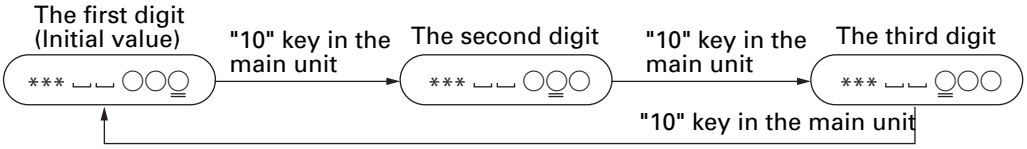
: Initial value of E-ATT (Tracking)

: Initial value of F-ATT (Tracking)

* Pressing "9" key in the main unit in each status switches to "TEST STOP" .
* Pressing "10"key in the main unit in each status where a setting value is displayed changes the digit of the setting value that will be changed.
  • When the setting value has two digits.

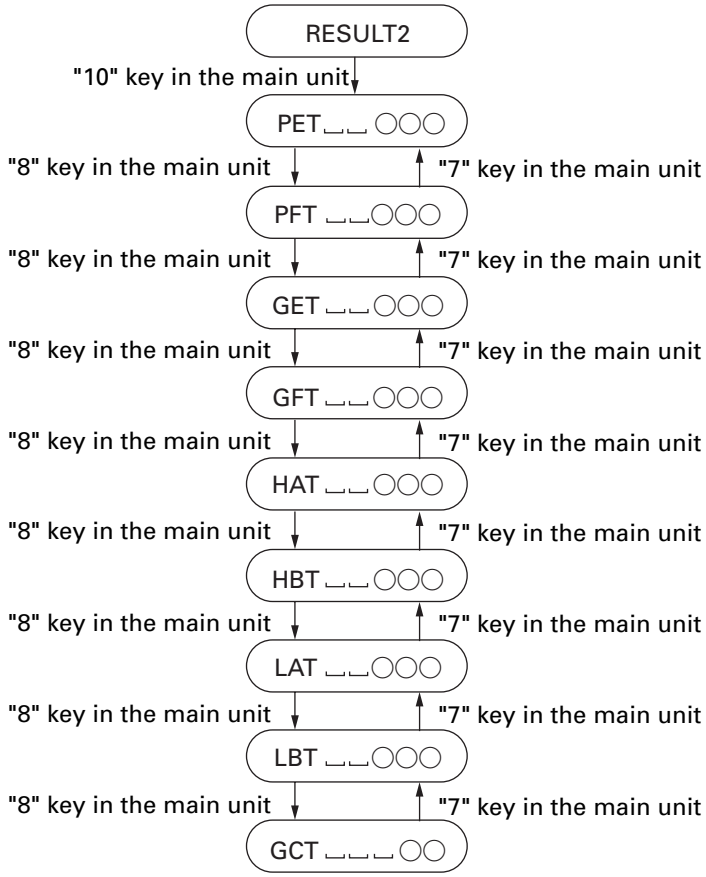


  • When the setting value has three digits.



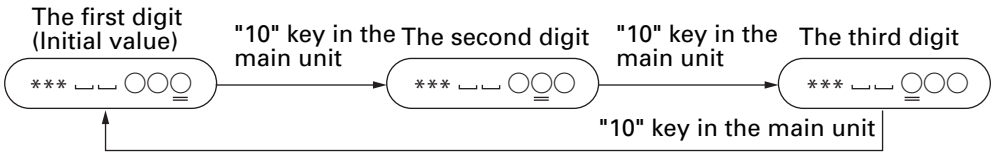
* Pressing VOL UP/DOWN key in each status where a setting value is displayed changes the value in the digit you selected in the range from 0H through FH. However, the setting value of RF side gain changes in the range from 0H through 6H.

● Checking ATT setting value


RESULT2
: ATT value checking menu
"10" key in the main unit
PET ␣␣ ○○○
: Setting value of E-ATT (Tracking) in pit part
"8" key in the main unit
"7" key in the main unit
PFT ␣␣○○○
: Setting value of F-ATT (Tracking) in pit part
GET ␣␣○○○
: Setting value of E-ATT (Tracking) in grove part
GFT ␣␣○○○
: Setting value of F-ATT (Tracking) in grove part
HAT ␣␣○○○
: Setting value of high reflection A-ATT (Focus)
HBT ␣␣○○○
: Setting value of high reflection B-ATT (Focus)
LAT ␣␣○○○
: Setting value of low reflection A-ATT (Focus)
LBT ␣␣○○○
: Setting value of low reflection B-ATT (Focus)
GCT ␣␣␣○○
: Setting value of TCRS-ATT

* Pressing "9" key in the main unit in each status switches to "TEST STOP" .
* Pressing "10" key in the main unit in each status where a setting value is displayed changes the digit of the setting value that will be changed.

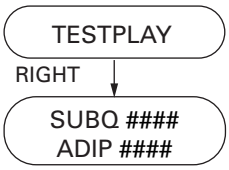
• When the setting value has three digits.



* Pressing RIGHT/LEFT key in each status where a setting value is displayed changes the value in the digit you selected in the range from 0_H through F_H.

● Continuous play

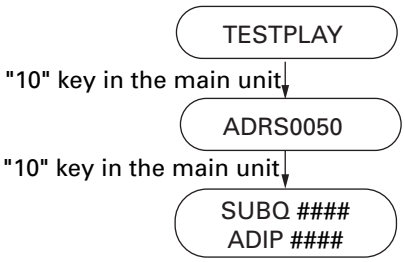
• When you start continuous play with the position which is picked up.



: Continuous play menu

: Continuous play (pit part)
: Continuous play (groove part)
: Address

• When you start continuous play with any address.

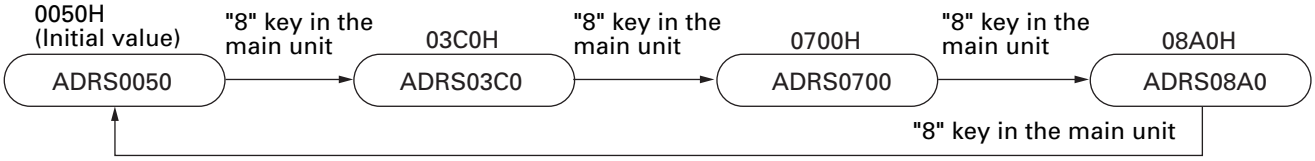


: Continuous play menu

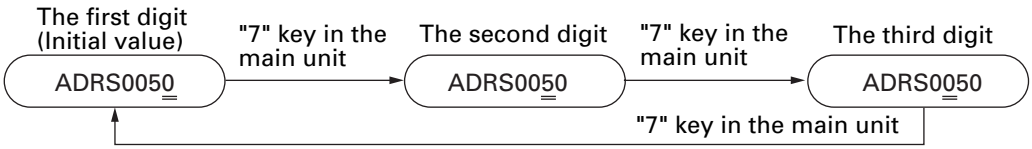
: Specify the address from which you start playing.

: Continuous play (pit part)
: Continuous play (groove part)
: Address

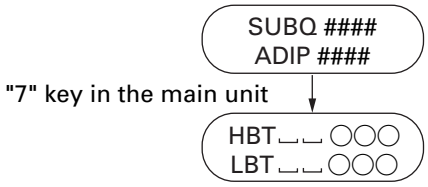
* Pressing "9" key in the main unit in each status switches to "TEST STOP" status.
* Pressing "8" key in the main unit in the status where you specified the address to start playing switches the digit of the address that will be changed.



* Pressing "7" key in the main unit in the status where you specified the address to start playing switches the digit of the address as shown below.



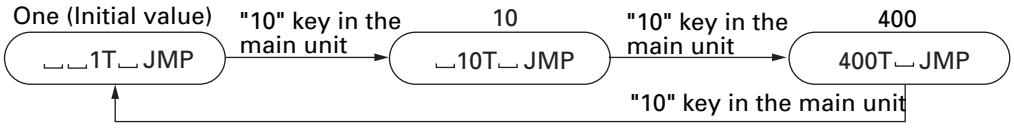
* Pressing RIGHT/LEFT key in each the status where you specified the address to start playing switches the value in the digit you selected in the range from 0_H through F_H.
* Pressing "7" key in the main unit in the continuous play status switches to the B-ATT setting status in the ATT manual tuning.



: Continuous play (pit part)
: Continuous play (groove part)
: Address

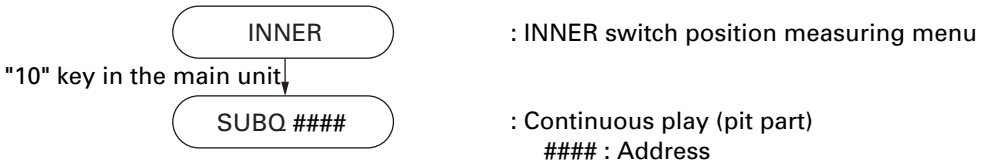
: B-ATT (Focus) setting of high reflection pit part
: B-ATT (Focus) setting of low reflection pit part
○○○ : ATT setting value

* Pressing "10" key in the main unit in switches the number of trucks to be jumped as shown below.



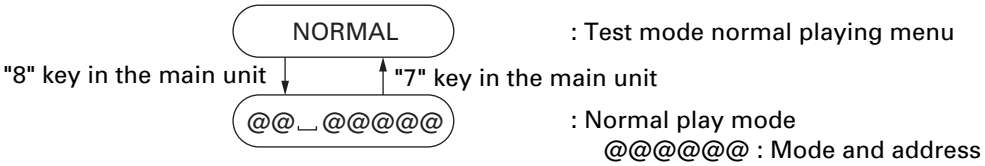
* Pressing RIGHT key in the continuous play status jumps the trucks by the number you specified in the direction of the outer circumference.
* Pressing LEFT key in the continuous play status jumps the trucks by the number you specified in the direction of the inner circumference.

● Measuring the position of INNER switch



* Pressing "9" key in the main unit in each status switches to "TEST STOP" .

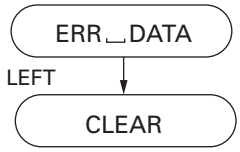
● Test mode normal play



* Pressing "RESET" key in the main unit in each status switches to "TEST STOP" .

● Displaying error history

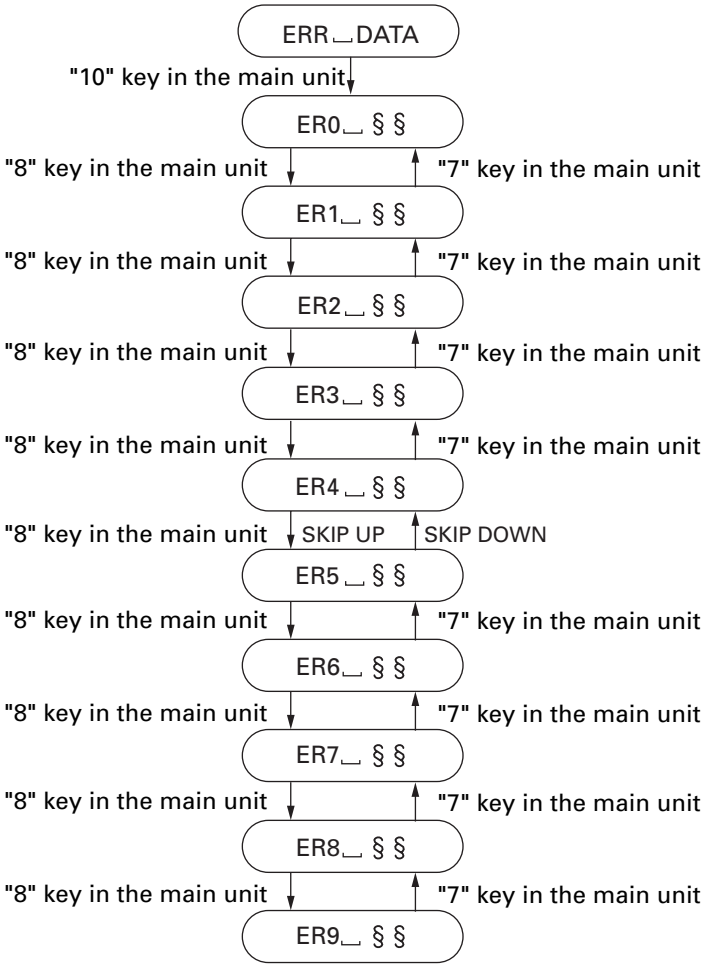
• Clearing error history



: Error history displaying menu

: Clear error history

• Displaying error history


ERR␣DATA
"10" key in the main unit
ER0␣§§
"8" key in the main unit
"7" key in the main unit
ER1␣§§
"8" key in the main unit
"7" key in the main unit
ER2␣§§
"8" key in the main unit
"7" key in the main unit
ER3␣§§
"8" key in the main unit
"7" key in the main unit
ER4␣§§
"8" key in the main unit
SKIP UP
SKIP DOWN
ER5␣§§
"8" key in the main unit
"7" key in the main unit
ER6␣§§
"8" key in the main unit
"7" key in the main unit
ER7␣§§
"8" key in the main unit
"7" key in the main unit
ER8␣§§
"8" key in the main unit
"7" key in the main unit
ER9␣§§

: Error history displaying menu

: Display error history 0
§§ : Error code

: Display error history 1
§§ : Error code

: Display error history 2
§§ : Error code

: Display error history 3
§§ : Error code

: Display error history 4
§§ : Error code

: Display error history 5
§§ : Error code

: Display error history 6
§§ : Error code

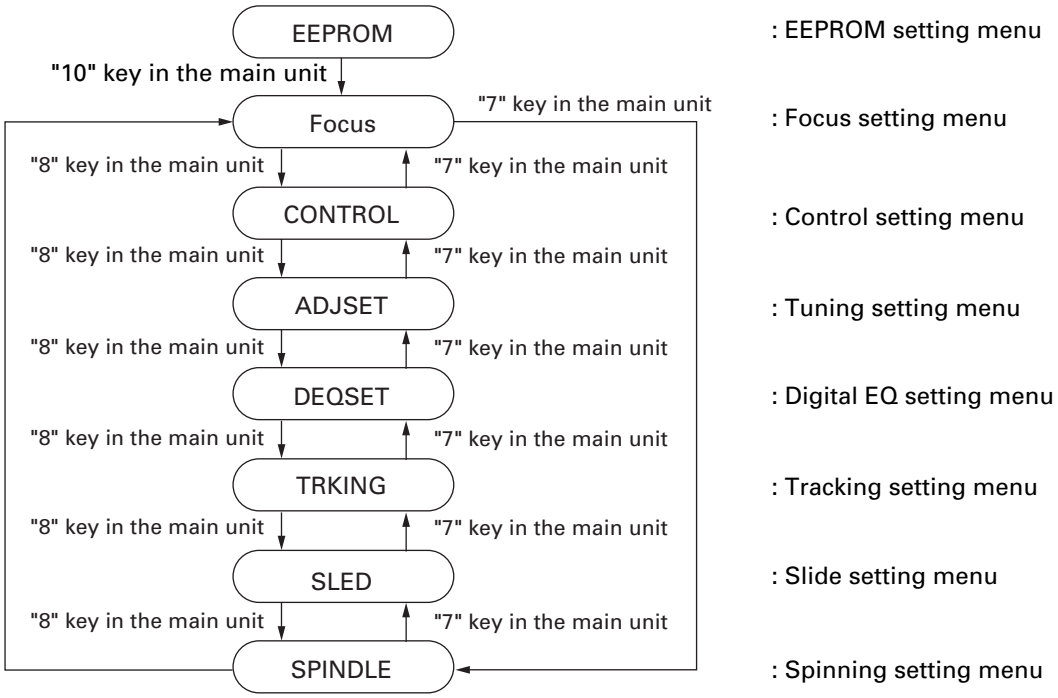
: Display error history 7
§§ : Error code

: Display error history 8
§§ : Error code

: Display error history 9
§§ : Error code

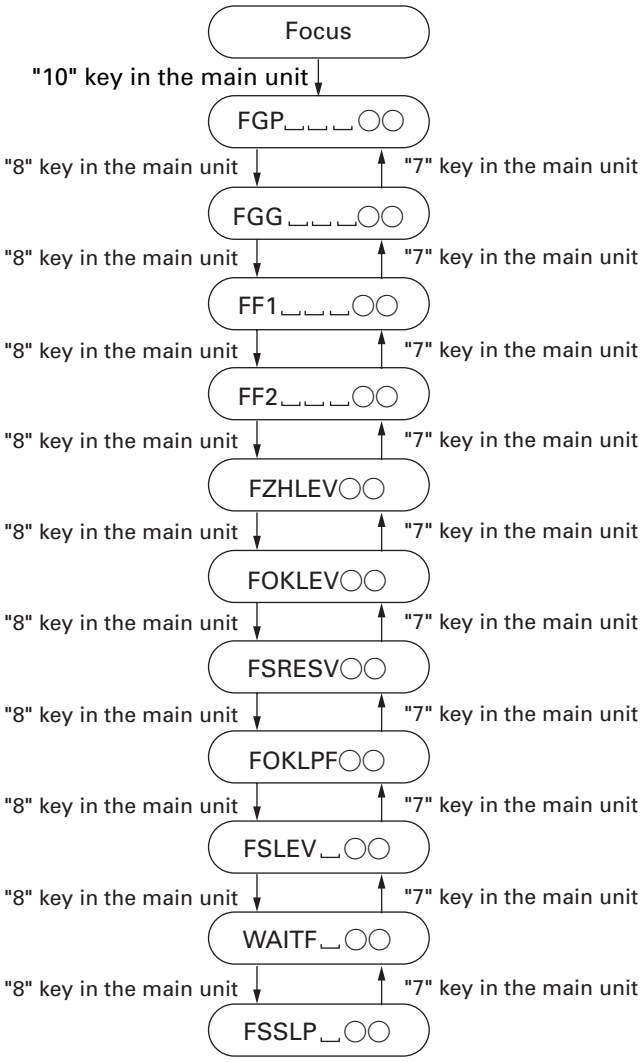
* Pressing "9" key in the main unit in each status switches to "TEST STOP" .

● Setting EEPROM


EEPROM
: EEPROM setting menu
"10" key in the main unit
"7" key in the main unit
Focus
: Focus setting menu
"8" key in the main unit
"7" key in the main unit
CONTROL
: Control setting menu
"8" key in the main unit
"7" key in the main unit
ADJSET
: Tuning setting menu
"8" key in the main unit
"7" key in the main unit
DEQSET
: Digital EQ setting menu
"8" key in the main unit
"7" key in the main unit
TRKING
: Tracking setting menu
"8" key in the main unit
"7" key in the main unit
SLED
: Slide setting menu
"8" key in the main unit
"7" key in the main unit
SPINDLE
: Spinning setting menu

* Pressing "9" key in the main unit in each status switches to "TEST STOP" .

● Setting focus


Focus
"10" key in the main unit
FGP␣␣␣○○
"8" key in the main unit
"7" key in the main unit
FGG␣␣␣○○
"8" key in the main unit
"7" key in the main unit
FF1␣␣␣○○
"8" key in the main unit
"7" key in the main unit
FF2␣␣␣○○
"8" key in the main unit
"7" key in the main unit
FZHLEV○○
"8" key in the main unit
"7" key in the main unit
FOKLEV○○
"8" key in the main unit
"7" key in the main unit
FSRESV○○
"8" key in the main unit
"7" key in the main unit
FOKLPF○○
"8" key in the main unit
"7" key in the main unit
FSLEV␣○○
"8" key in the main unit
"7" key in the main unit
WAITF␣○○
"8" key in the main unit
"7" key in the main unit
FSSLP␣○○

: Focus setting menu

: Setting value of the gain constant for focus based loop filter (PIT)
○○ : Setting value

: Setting value of the gain constant for focus based loop filter (GRV)
○○ : Setting value

: The first setting value of the number specifying f for focus based loop filter
○○ : Setting value

: The second setting value of the number specifying f for focus based loop filter
○○ : Setting value

: Setting value of the hysteresis level to be detected in FZC
○○ : Setting value

: Setting value of the hysteresis level to be detected in FOK
○○ : Setting value

: Reserve for focus control
○○ : Setting value

: Setting value of LPF factor during FOK generation
○○ : Setting value

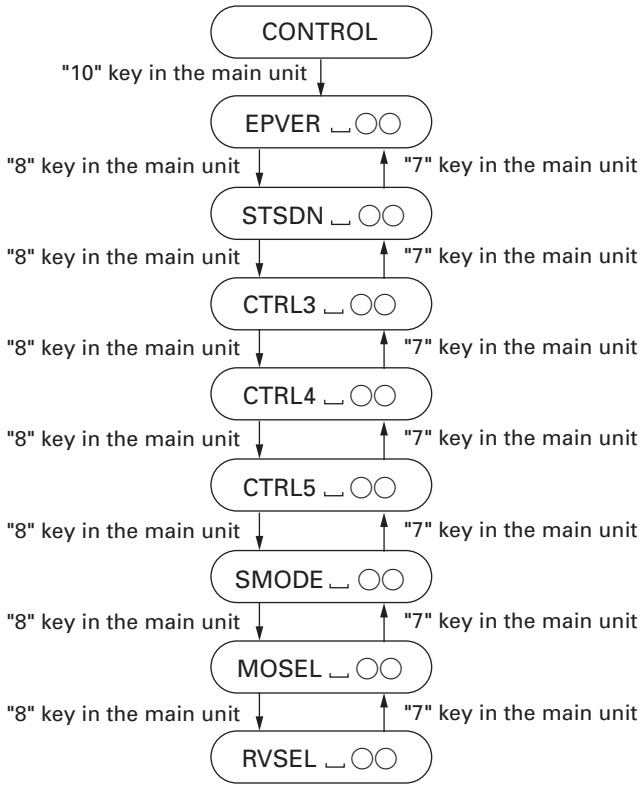
: Amplitude of focus search
○○ : Setting value

: Setting value of wait time during feeding with auto focus
○○ : Setting value

: Slope of focus search
○○ : Setting value

* Pressing "9" key in the main unit in each status switches to "TEST STOP" .
* Pressing RIGHT/LEFT key in each status switches the setting value in the range from 00_H through FF_H.
(Upper limits depend on items.)

● Setting control


CONTROL
"10" key in the main unit
EPVER ␣○○
"8" key in the main unit
"7" key in the main unit
STSDN ␣○○
"8" key in the main unit
"7" key in the main unit
CTRL3 ␣○○
"8" key in the main unit
"7" key in the main unit
CTRL4 ␣○○
"8" key in the main unit
"7" key in the main unit
CTRL5 ␣○○
"8" key in the main unit
"7" key in the main unit
SMODE ␣○○
"8" key in the main unit
"7" key in the main unit
MOSEL ␣○○
"8" key in the main unit
"7" key in the main unit
RVSEL ␣○○

: Control setting menu

: EEPROM version
○○ : Setting value

: The number of accumulated sectors when voice starts.
○○ : Setting value

: Setting value 3 for controlling
○○ : Setting value

: Setting value 4 for controlling
○○ : Setting value

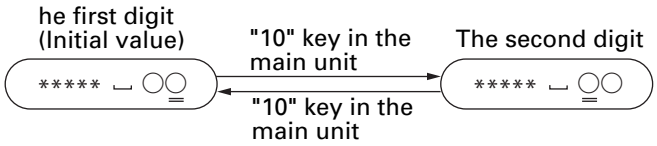
: Setting value 5 for control
○○ : Setting value

: Special mode select data
○○ : Setting value

: Monitor select data
○○ : Setting value

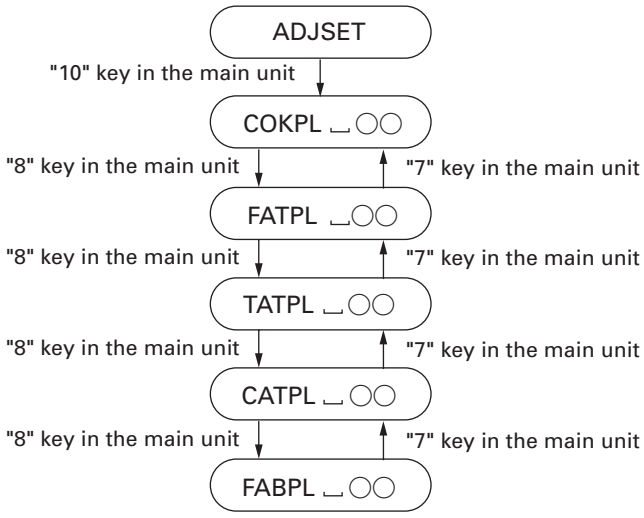
: Setting data related to controlling and others
○○ : Setting value

* Pressing "9" key in the main unit in each status switches to "TEST STOP" .
* Pressing "10" key in the main unit in each status where a setting value is displayed changes the digit of the setting value that will be changed.



* Pressing RIGHT/LEFT key in each status where a setting value is displayed changes the value in the digit you selected in the range from 0_H through F_H.

● Tuning setting


ADJSET
"10" key in the main unit
COKPL ␣ ○○
"8" key in the main unit
"7" key in the main unit
FATPL ␣ ○○
"8" key in the main unit
"7" key in the main unit
TATPL ␣ ○○
"8" key in the main unit
"7" key in the main unit
CATPL ␣ ○○
"8" key in the main unit
"7" key in the main unit
FABPL ␣ ○○

: Environment setting menu

: Reference value of COUT level for tuning
○○ : Setting value

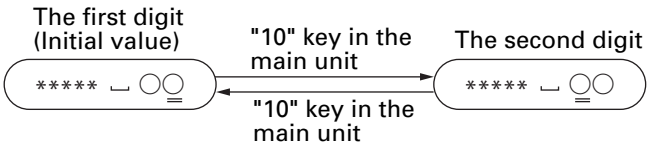
: Focus ATT reference value
○○ : Setting value

: Tracking ATT reference value
○○ : Setting value

: TCRS ATT reference value
○○ : Setting value

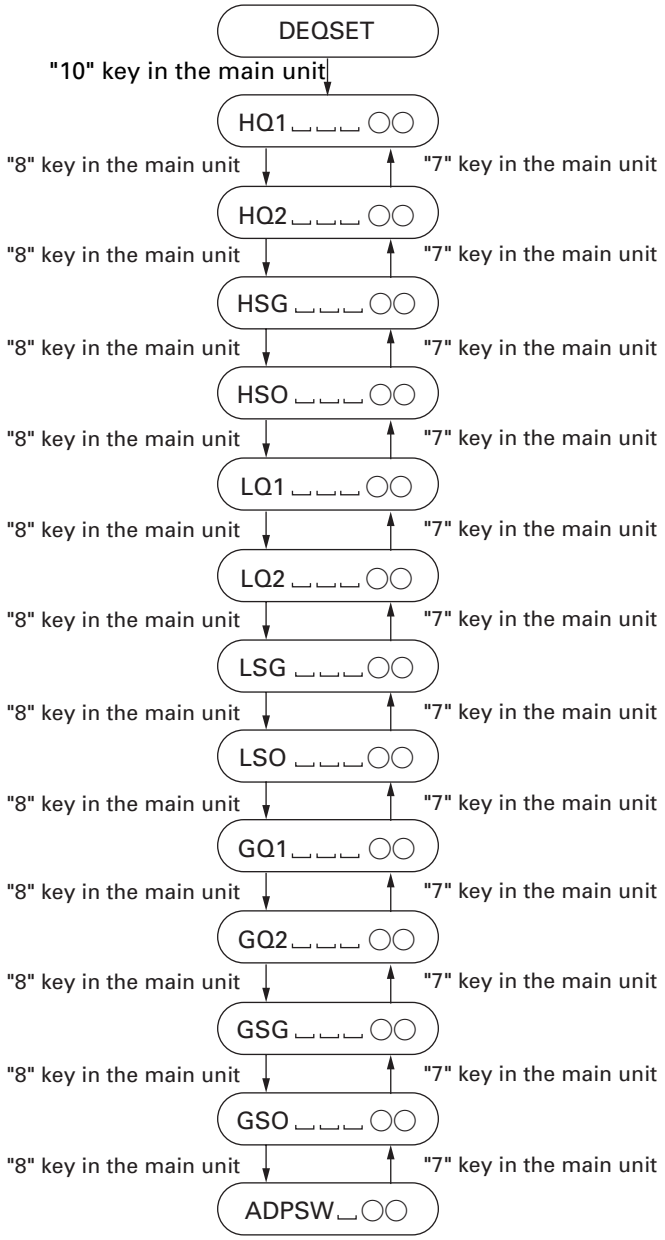
: Focus balance factor
○○ : Setting value

* Pressing "9" key in the main unit in each status switches to "TEST STOP" .
* Pressing "10" key in the main unit in each status where a setting value is displayed changes the digit of the setting value that will be changed.



* Pressing RIGHT/LEFT key in each status where a setting value is displayed changes the value in the digit you selected in the range from 0_H through F_H.

● Setting digital EQ



: Digital EQ setting menu

: Digital EQ tap factor A, D for high reflection pit part
○○ : Setting value

: Digital EQ tap factor B, C for high reflection pit part
○○ : Setting value

: Gain of auto level slicer for high reflection pit part
○○ : Setting value

: Slice level offset of auto level slicer for high reflection pit part
○○ : Setting value

: Digital EQ tap factor A, D for low reflection pit part
○○ : Setting value

: Digital EQ tap factor B, C for low reflection pit part
○○ : Setting value

: Gain of auto level slicer for low reflection pit part
○○ : Setting value

: Slice level offset of auto level slicer for low reflection pit part
○○ : Setting value

: Digital EQ tap factor A, D for low reflection groove part
○○ : Setting value

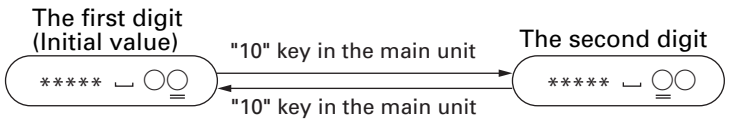
: Digital EQ tap factor B, C for low reflection groove part
○○ : Setting value

: Gain of auto level slicer for low reflection groove part
○○ : Setting value

: Slice level offset of auto level slicer for low reflection groove part
○○ : Setting value

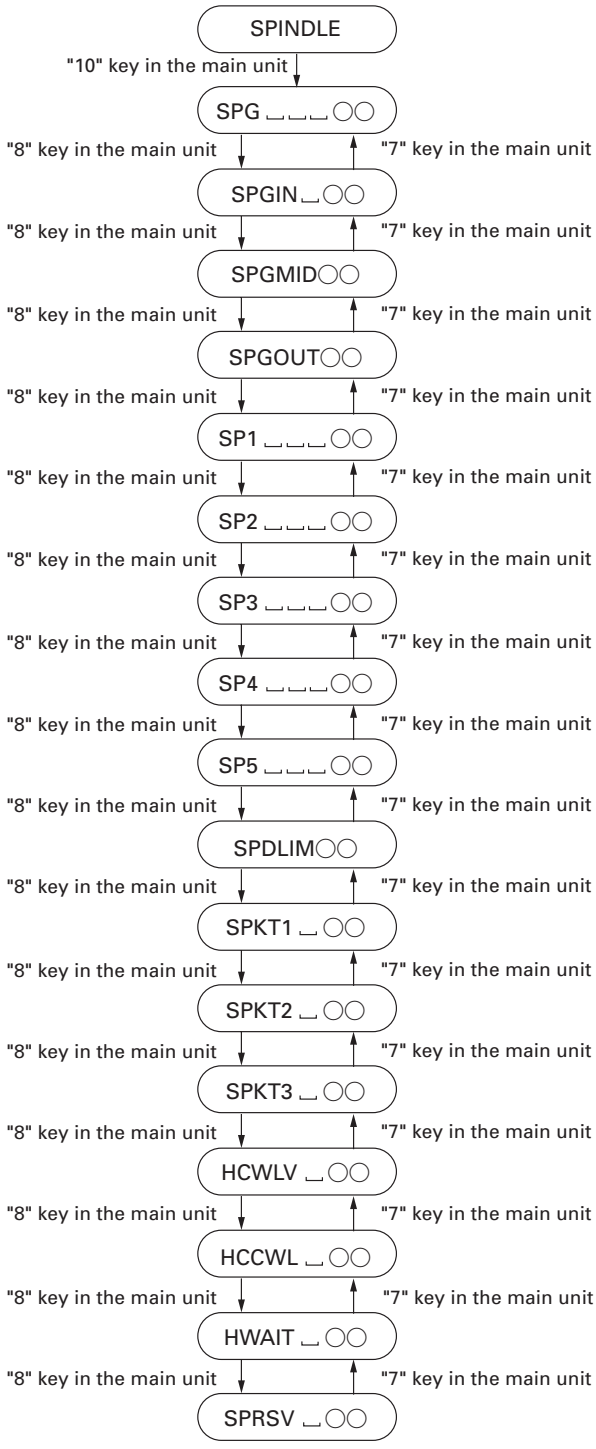
: Reverse switch of servo AD input
○○ : Setting value

* Pressing "9" key in the main unit in each status switches to "TEST STOP" .
* Pressing "10" key in the main unit in each status where a setting value is displayed changes the digit of the setting value that will be changed.



* Pressing RIGHT/LEFT key in each status where a setting value is displayed changes the value in the digit you selected in the range from 0H through FH.

● Setting spinning



: Spinning setting menu

: Setting value of the gain constant for spin based loop filter
○○ : Setting value

: Setting value of the gain constant for spin based loop filter (Inner circumference)
○○ : Setting value

: Setting value of the gain constant for spin based loop filter (Mid circumference)
○○ : Setting value

: Setting value of the gain constant for spin based loop filter (Outer circumference)
○○ : Setting value

: The first setting value of the number specifying f for spin based loop filter
○○ : Setting value

: The second setting value of the number specifying f for spin based loop filter
○○ : Setting value

: The third setting value of the number specifying f for spin based loop filter
○○ : Setting value

: The fourth setting value of the number specifying f for spin based loop filter
○○ : Setting value

: The fifth setting value of the number specifying f for spin based loop filter
○○ : Setting value

: Limiter setting value of spin drive PWM duty
○○ : Setting value

: Initial kick level of spinning (duration)
○○ : Setting value

: Rotation kick level of spinning (time)
○○ : Setting value

: Interval between spinning and resuming
○○ : Setting value

: Level to determine high speed forward rotation
○○ : Setting value

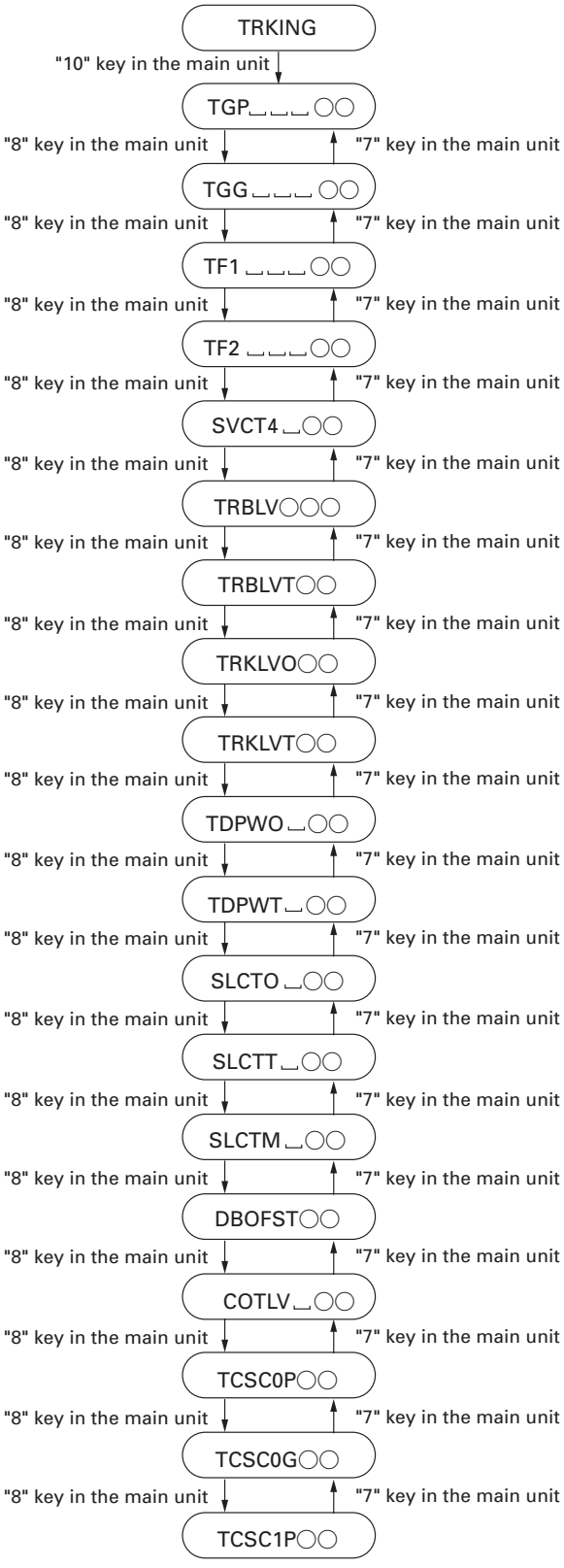
: Level to determine high speed backward rotation
○○ : Setting value

: KICK wait during high speed rotation
○○ : Setting value

: Reserve for spindle controlling
○○ : Setting value

* Pressing "9" key in the main unit in each status switches to "TEST STOP" .
* Pressing RIGHT/LEFT key in each status where a setting value is displayed changes the value in the digit you selected in the range from 0H through FH. (Upper limits depend on items.)

● Setting tracking



: Tracking setting menu

: Setting value of the gain constant for tracking based loop filter (PIT)
○○ : Setting value

: Setting value of the gain constant for tracking based loop filter (GRV)
○○ : Setting value

: The first setting value of the number specifying f for spin based loop filter
○○ : Setting value

: The second setting value of the number specifying f for spin based loop filter
○○ : Setting value

: Tracking filter switch
○○ : Setting value

: Break level setting for jumping over one truck
○○ : Setting value

: Break level setting for jumping over ten trucks
○○ : Setting value

: Kick pulse level setting for jumping over one truck
○○ : Setting value

: Kick pulse level setting for jumping over ten trucks
○○ : Setting value

: Drive pulse width time setting for jumping over one truck
○○ : Setting value

: Drive pulse width time setting for jumping over ten trucks
○○ : Setting value

: Nonslid time setting for jumping over one truck
○○ : Setting value

: Nonslid time setting for jumping over ten trucks
○○ : Setting value

: Move nonslid time setting
○○ : Setting value

: PWM output offset setting
○○ : Setting value

: Comparison level setting value during COUT generation
○○ : Setting value

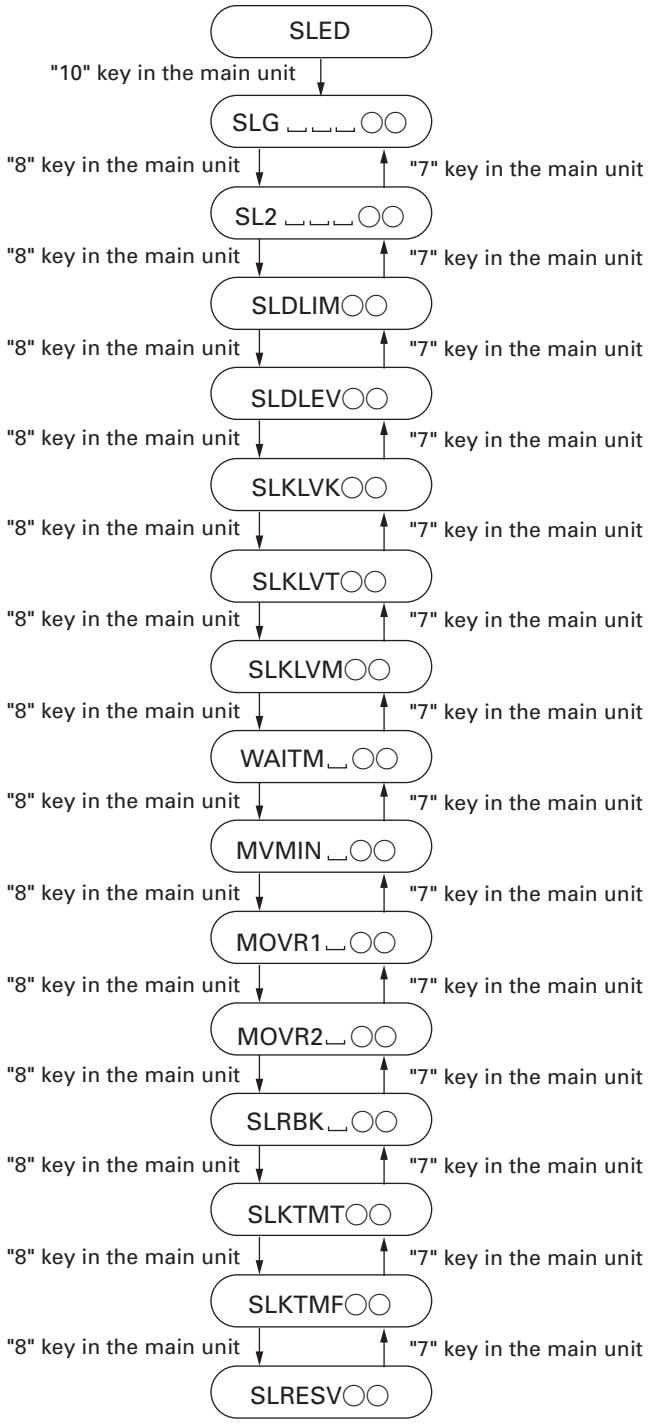
: TCRSC0 level setting (pit part)
○○ : Setting value

: TCRSC0 level setting (groove part)
○○ : Setting value

: TCRSC1 level setting (pit part)
○○ : Setting value

* Pressing "9" key in the main unit in each status switches to "TEST STOP" .
* Pressing RIGHT/LEFT key in each status where a setting value is displayed changes the value in the digit you selected in the range from 00H through FFH.
(Upper limits depend on items.)

● Setting slide



: Slide setting menu

: Thread gain constant
○○ : Setting value

: Slide filter factor 2
○○ : Setting value

: Slide output limiter
○○ : Setting value

: Slide output dead zone
○○ : Setting value

: Kick level during compelled slide move
○○ : Setting value

: Kick level for jumping over ten trucks
○○ : Setting value

: Kick level during move
○○ : Setting value

: Feed wait time after move
○○ : Setting value

: Minimum number of move trucks to be started
○○ : Setting value

: Move overrun table 1
○○ : Setting value

: Move overrun table 2
○○ : Setting value

: Break setting during feeding through inner circumference
○○ : Setting value

: Supplementary feeding time for jumping over ten trucks
○○ : Setting value

: PIT GRV feeding time
○○ : Setting value

: Thread control reserve
○○ : Setting value

* Pressing "9" key in the main unit in each status switches to "TEST STOP" .
* Pressing RIGHT/LEFT key in each status where a setting value is displayed changes the value in the digit you selected in the range from 00_H through FF_H.
(Upper limits depend on items.)

7.1.2 DISASSEMBLY

● **Removing the Case (not shown)**

1. Remove the Case.

● **Removing the MD Mechanism Module(Fig.1)**

1. Remove the four screws.
2. Disconnect the connector, and then remove the MD Mechanism Module.

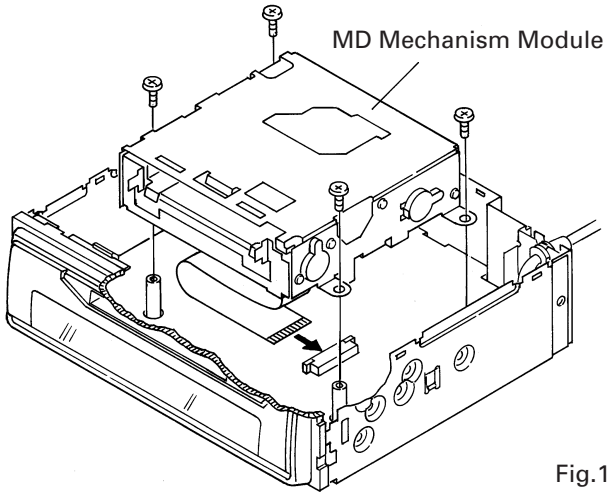


Fig.1

● **Removing the Grille Assy(Fig.2)**

1. Disengage the stoppers at two locations.
2. Disconnect the connector, and then remove the Grille Assy.

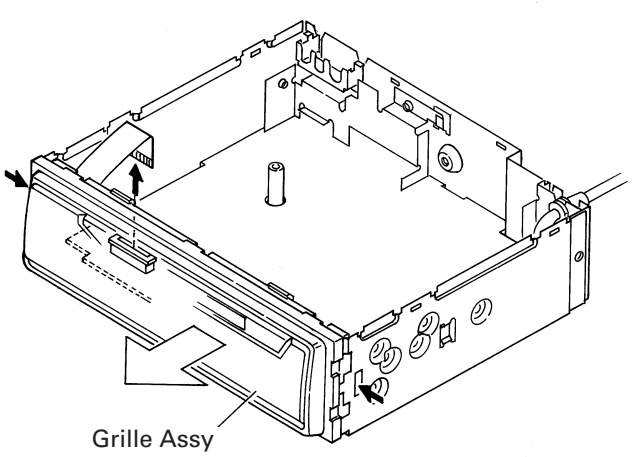


Fig.2

● **Removing the Audio Control Unit(Fig.3)**

1. Remove the three screws.
2. Straighten the tabs at four locations indicated.
3. Remove the Audio Control Unit.

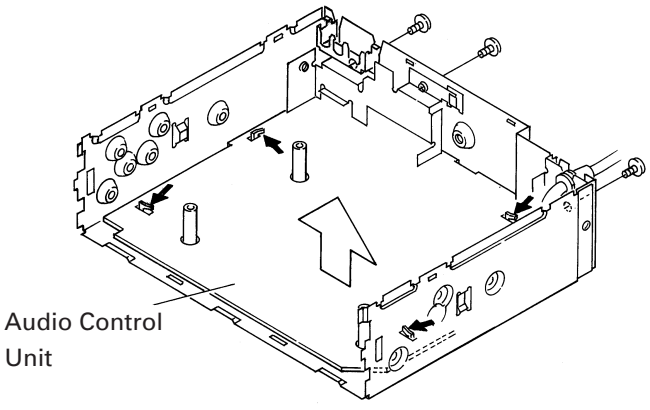


Fig.3

● **Removing the MD Mechanism (Fig.4)**

1. Remove No.3 screws and remove the loading motor.
2. Rotate No.4 gear in the direction indicated by the arrow.
3. Remove the No.1 screws , No.2 screw and then No.5 screws and take out the mechanism.

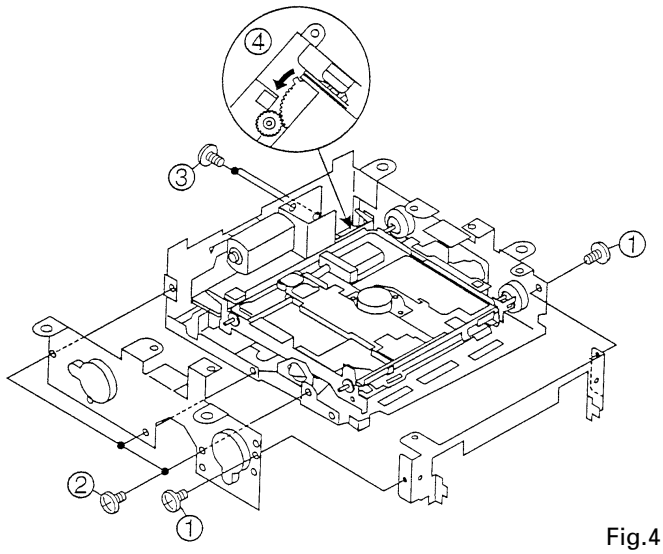


Fig.4

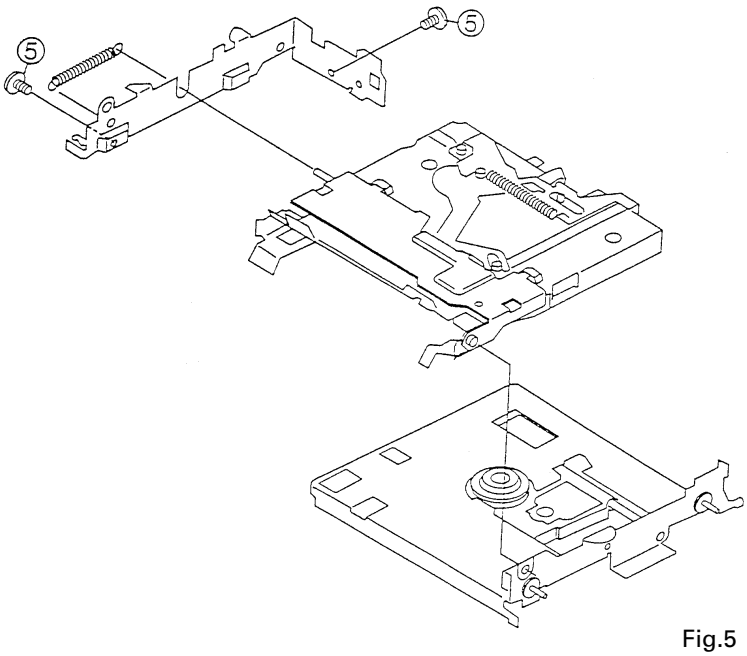


Fig.5

● **How to remove optical pickup (Fig.6)**

1. Release the three screws.
2. Pull one shaft out a little to the slide motor side and lift the optical pickup upward slowly.

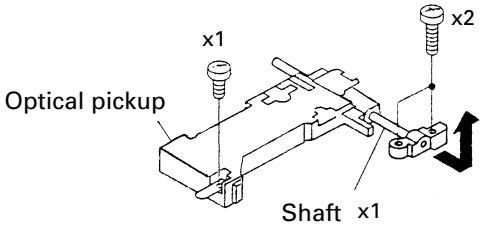


Fig.6

7.2 PARTS

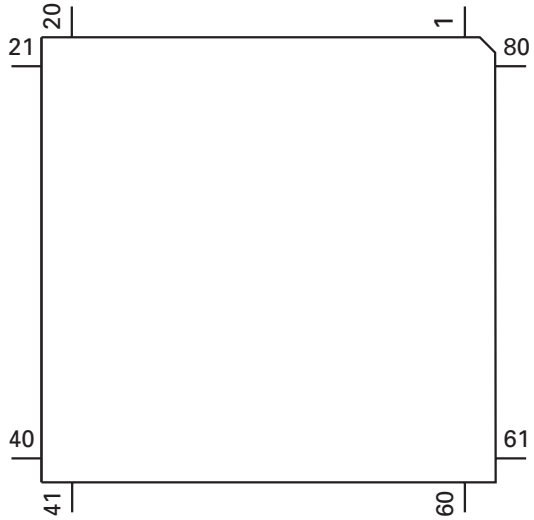
7.2.1 IC

● **Pin Functions (PD4880B)**

Pin No.	Pin Name	I/O	Format	Function and Operation
1-3	NC			Not used
4	AVSS			A/D GND
5,6	NC			Not used
7	AVREF1			(Connect to GND)
8-13	NC			Not used
14	$\overline{\text{CLOSE}}$	I		CLOSE key input
15-26	NC			Not used
27	MSIN	I		MS sense
28	DIRO	O	C	Head F/R select output
29	PLAY	O	C	MS gain select output
30	MTLSW	I		Metal sense input
31	DLBYB/C	O	C	Dolby B/C select output
32	NR	O	C	Dolby NR ON/OFF select output
33	VSS			GND
34	LOAD	I		Loading motor LOAD control
35	POS	I		Cassette mechanism position sense input
36	RES	I		Cassette mechanism reverse end sense input
37	NES	I		Cassette mechanism forward end sense input
38	SC2	O	N	Cassette mechanism sub motor control output
39	SC1	O	N	Cassette mechanism sub motor control output
40	CM	O	C	Cassette mechanism capstan motor control output
41	STBY	O	C	2L mechanism port
42	NC			Not used
43	SOR0	O	C	Source select output
44-48	NC			Not used
49	MUTE	O	C	Mute output
50-55	NC			Not used
56	TX	O	C	Digital audio interface data output terminal
57	RX	I		IP BUS data input
58	$\overline{\text{IPPW}}$	O	C	Power supply control output for IP BUS interface IC
59	NC			Not used
60	$\overline{\text{RESET}}$	I		Reset input
61	NC			Not used
62	$\overline{\text{BSENS}}$	I		Back up power sense input
63	$\overline{\text{ASENS}}$	I		ACC power sense input
64	DOLBYB	O	C	B signal output
65	DOLBYC	O	C	C signal output
66	DSPPW	O	C	Power supply for DSP
67	ISENS	I		Illumination sense input
68	VDD			Power supply
69	XO	O		Crystal oscillator connection pin
70	XI	I		Crystal oscillator connection pin
71	IC			GND
72	XT2			Sub Clock terminal
73	TESTIN	I		Test program mode input
74	AVDD			A/D converter power supply for analog circuit
75	AVREFO	I		A/D converter reference voltage input
76	NC			Not used
77	MODEL	I		Model select input
78-80	NC			Not used

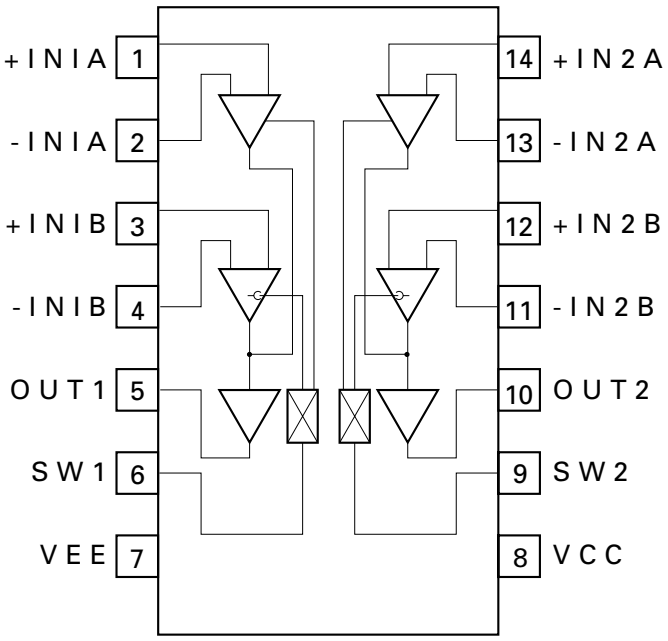
Format	Meaning
C	C MOS
N	N channel open drain

*PD4880B

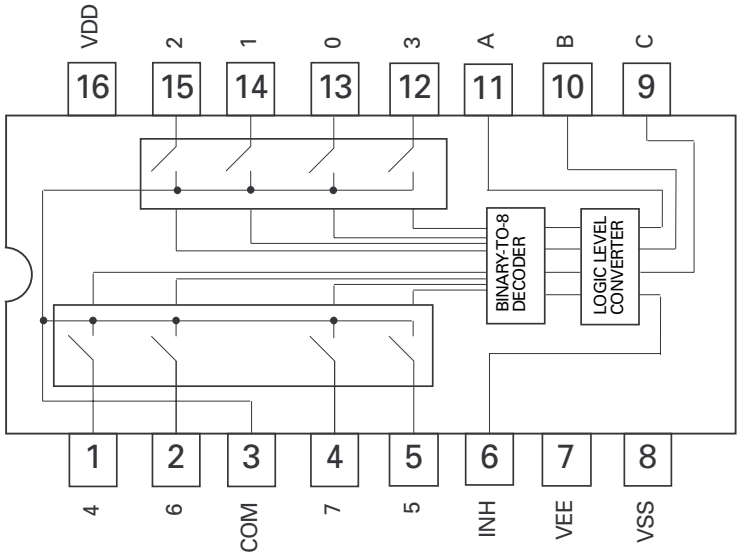


IC's marked by* are MOS type.
Be careful in handling them because they are very liable to be damaged by electrostatic induction.

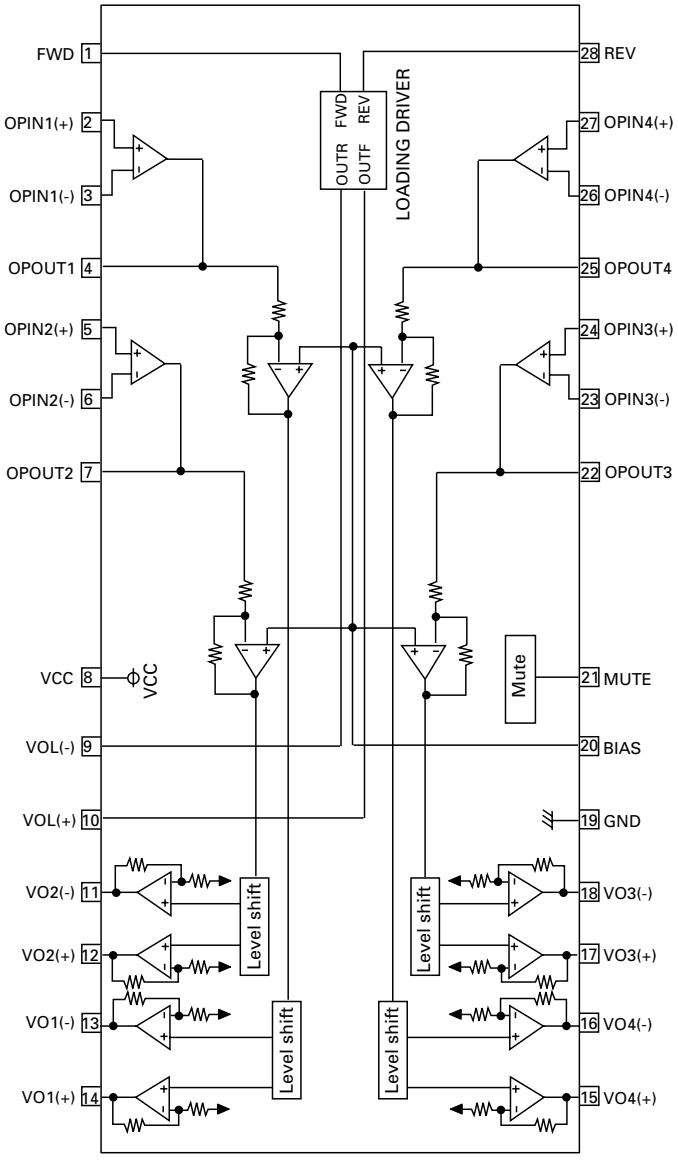
BA3129



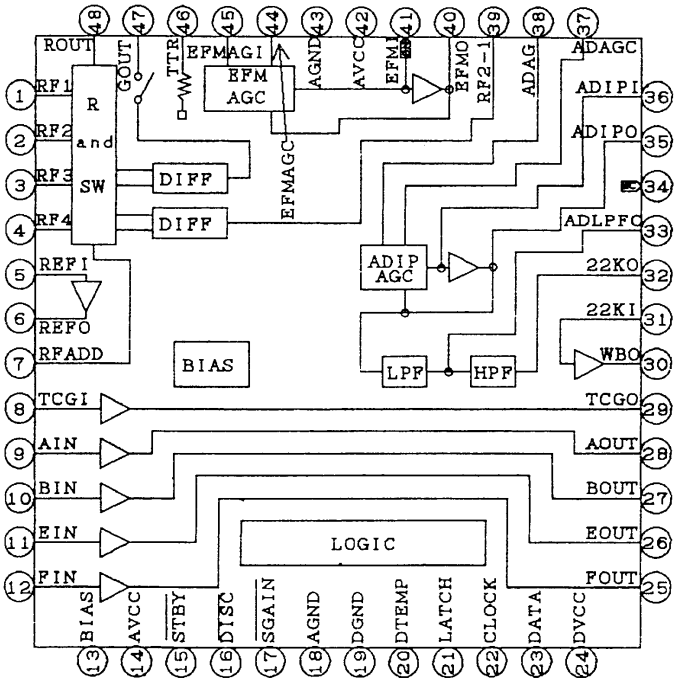
TC4051BP1



BA5985FM



*1245730345



● **Pin Functions (1245730345)**

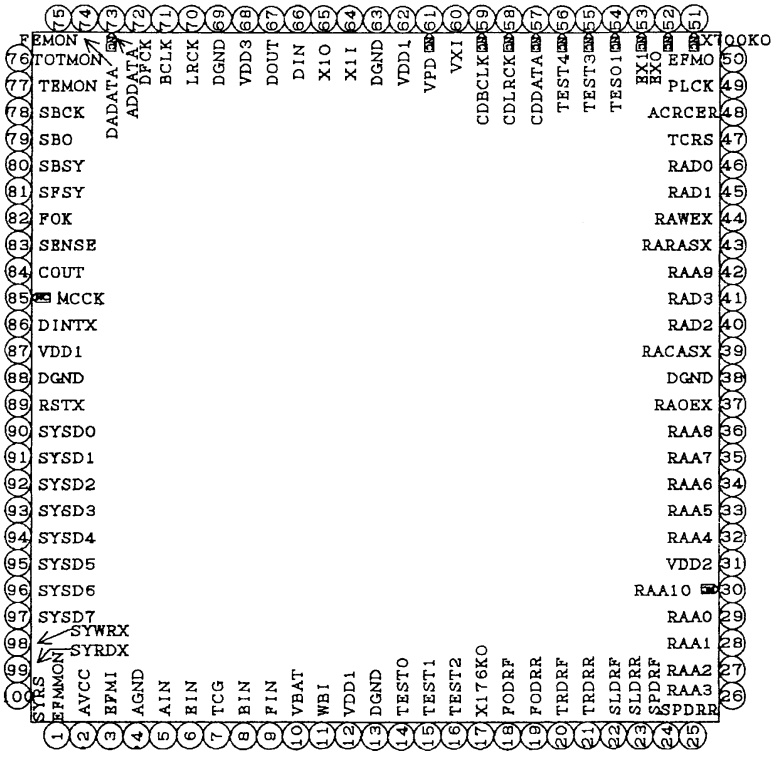
Pin No.	Pin Name	I/O	Function and Operation
1-4	RF1-4	I	RF signal input terminals 1-4 Input RF signal output from pickup
5	REFI	I	Reference voltage amplifier input
6	REFO	O	Reference voltage amplifier output
7	RFADD	O	Terminal outputting added resistance of RF 1-4
8	TCGI	I	Terminal amplified inputting track cross detected signal at groove
9	AIN	I	Inverted input terminal of signal amplifier for the servo (Focus servo based)
10	BIN	I	Inverted input terminal of signal amplifier for the servo (Focus servo based)
11	EIN	I	Inverted input terminal of signal amplifier for the servo (Tracking servo based)
12	FIN	I	Inverted input terminal of signal amplifier for the servo (Tracking servo based)
13	BIAS	I	Bias input
14	AVCC		Analog power supply
15	XSTBY	O	Logic signal outputting terminal (Outputs inverted STBY signal)
16	XDISC	O	Logic signal outputting terminal (Outputs inverted DISC signal)
17	XGAIN	O	Logic signal outputting terminal (Outputs inverted SGAIN signal)
18	AGND		Analog GND
19	DGND		Digital GND
20	DTEMP	I	Chip temperature detection
21	LATCH	I	Latch signal input
22	CLOCK	I	Clock signal input
23	DATA	I	Serial data input
24	DVCC		Digital GND
25	FOUT	O	Output terminal of signal amplifier for the servo (Tracking servo based)
26	EOUT	O	Output terminal of signal amplifier for the servo (Tracking servo based)
27	BOPUT	O	Output terminal of signal amplifier for the servo (Focus servo based)
28	AOUT	O	Output terminal of signal amplifier for the servo (Focus servo based)
29	TCGO	O	Terminal amplified inputting tracking cross detected signal at groove
30	WBO	O	Converter output terminal for ADIP signal binarization
31	22KI	I	Converter input terminal for ADIP signal trinarization
32	22KO	O	ADIP signal HPF amplifier output
33	ADLPFO	O	ADIP signal LPF amplifier output
34	NC		Not used
35	ADIPO	O	ADIP signal pre-amplifier output
36	ADIPI	O	ADIP signal AGC amplifier output
37	ADAGC		ADIP signal AGC smoothing capacitor connection pin
38	ADAGI	I	ADIP signal AGC amplifier input
39	RF2-1		Differential signal of RF1 and RF2
40	EFMO	O	RF signal pre-amplifier output
41	EFMI	O	RF signal AGC amplifier output
42	AVCC		Analog power supply
43	AGND		Analog GND
44	EFMAGC		EFM signal AGC smoothing capacitor connection pin
45	EFMAGI	I	EFM signal AGC amplifier input
46	ATTR		47and 48 pin output signal attenuation terminal
47	GOUT	O	Outputs RF1+RF2+RF3–RF4 signal at groove
48	ROUT	O	Outputs added resistance of RF1-4 at PIT

● **Pin Functions (1245730449)**

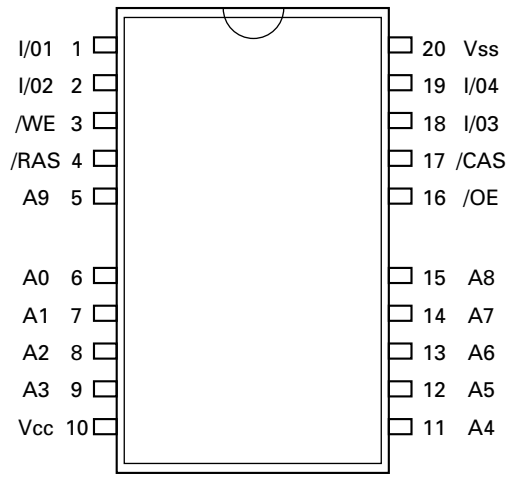
Pin No.	Pin Name	I/O	Function and Operation
1	EFMMON	O	EFM monitor output
2	AVCC		Analog power supply
3	EFMI	I	EFM signal input from RF AMP
4	AGND		Analog GND
5	AIN	I	Focus error signal A
6	EIN	I	Tracking error signal E
7	TCG	I	Tracking cross signal
8	BIN	I	Focus error signal B
9	FIN	I	Tracking error signal F
10	VBAT	I	Power supply voltage detection signal for constant voltage servo
11	WBI	I	ADIP wobble signal
12	VDD1		Digital power supply
13	DGND		Digital GND
14,15	TEST0,1	I	Test input normality : GND
16	TEST2	I	Test input en-deco/servo mode, ATRAC mode select normality : GND
17	X176KO	O	Clock output f=176.4KHz (4fs)
18	FODRF	O	Focus servo forward output PWM
19	FODRR	O	Focus servo reverse output PWM
20	TRDRF	O	Tracking servo forward output PWM
21	TRDRR	O	Tracking servo reverse output PWM
22	SLDRF	O	Slide servo forward output PWM
23	SLDRR	O	Slide servo reverse output PWM
24	SPDRF	O	Spindle servo forward output or spindle servo output PWM
25	SPDRR	O	Spindle servo reverse output or spindle rotary FWD/REV select
26-28	RAA3-1	O	Address output to external D-RAM ADR3-1
29	RAA0	O	Address output to external D-RAM ADR0 (LSB)
30	RAA10	O	Address output to external D-RAM ADR10 (MSB)
31	VDD2		D-RAM interface power supply
32-36	RAA4-8	O	Address output to external D-RAM ADR4-8
37	RA0EX	O	Data output enable signal to external D-RAM
38	DGND		Digital GND
39	RACASX	O	Column address strobe signal output to external D-RAM
40	RAD2	I/O	Data input/output with external D-RAM D2
41	RAD3	I/O	Data input/output with external D-RAM D3 (MSB)
42	RAA9	O	Address output to external D-RAM ADR9
43	RARASX	O	Row address strobe signal output to external D-RAM
44	RAWEX	O	Data write enable signal output to external D-RAM
45	RAD1	I/O	Data input/output with external D-RAM D1
46	RAD0	I/O	Data input/output with external D-RAM D0 (LSB)
47	TCRS	O	Track cross signal
48	ACRCER	O	ADIP CRC error flag monitor output
49	PLCK	O	EFM PLL clock output at playback
50	EFMO	O	Outputs EFM signal when recording Outputs C1F (C1 error flag) monitor when playbacking
51	X700KO	O	Clock output f=705.6KHz Dose not output clock when RSTX=0
52,53	EXPORT0,1	O	Microprocessor extended output port 0,1
54	TESO1	O	PLLLR Microprocessor extended output port 2 when switching
55	TEST3	I/O	PLLOSC Microprocessor extended output port 3 when switching
56	TEST4	I/O	EXTCLK Microprocessor extended output port 4 when switching
57	CDDATA	I/O	Inputs CD data for high speed dubbing Microprocessor extended output port 5 when switching
58	CDLRCK	I/O	Inputs CD LR clock for high speed dubbing Microprocessor extended output port 6 when switching
59	CDBCLK	I/O	Inputs CD bit clock for high speed dubbing Microprocessor extended output port 7 when switching
60	VXI	I	Inputs PLL clock for varipitch
61	VPO	O	Outputs PLL phase error for varipitch
62	VDD1		Digital power supply
63	DGND		Digital GND

Pin No.	Pin Name	I/O	Function and Operation
64	XI	I	Inputs oscillator 33.8688MHz
65	XO	O	Outputs oscillator 33.8688MHz
66	DIN	I	Digital input signal
67	DOUT	O	Digital output signal
68	VDD3		Internal PLL power supply
69	DGND		Digital GND
70	LRCK	O	Lch/Rch select output of audio data
71	BCLK	O	Shift clock of audio data
72	DFCK	O	AD/DA converter digital filter clock 256Fs
73	ADDATA	I	Audio data input
74	DADATA	O	Audio data output
75	FEMON	O	Focus error signal monitor output
76	TOTMON	O	Total signal monitor output
77	TEMON	O	Tracking error signal monitor output
78	SBCK	I	DIN subcode read clock EIAJ CP-309 format
79	SBO	O	DIN subcode read serial data EIAJ CP-309 format
80	SBSY	O	DIN subcode block synchronizing signal CP-309 format
81	SFSY	O	DIN subcode frame synchronizing signal CP-309 format
82	FOK	O	Focus OK detection signal "0" : Focus OK
83	SENSE	O	Servo condition detection signal "1": During pull in auto move, auto jump, auto focus
84	COUT	O	Track cross signal output
85	MCCK	O	Clock output for microcomputer Outputs clock when RSTX=0
86	DINTX	O	Interrupt request output to system control interface
87	VDD1		Digital power supply
88	DGND		Digital GND
89	RSTX	I	Chip reset input L : Reset
90-97	SYD0-7	I/O	System control interface data bus
98	SYWRX	I	System control interface register write pulse input
99	SYRDX	I	System control interface register read pulse input
100	SYRS	I	System control interface register select input

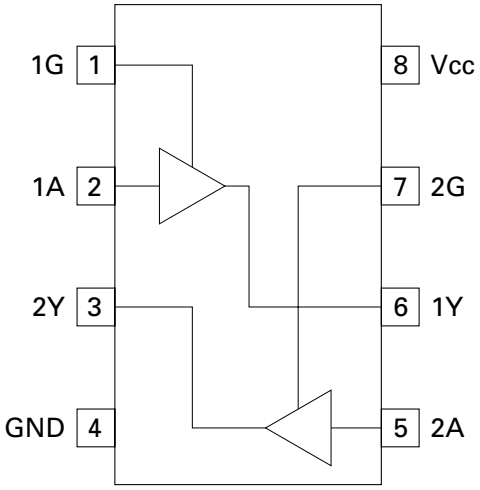
*1245730449



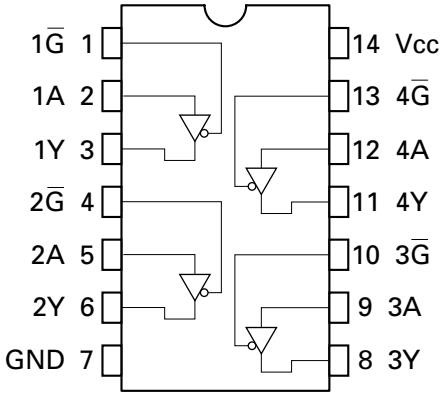
*1245730502



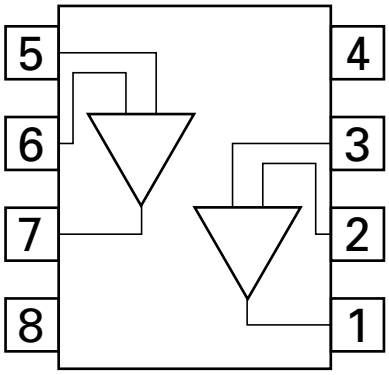
1245730310



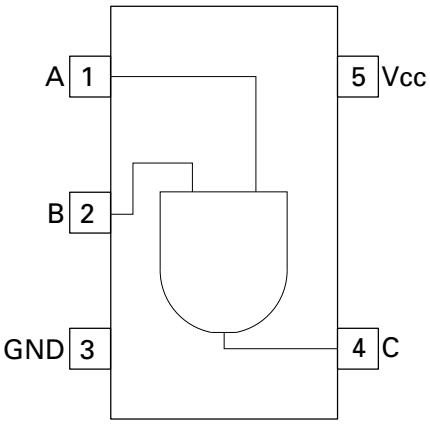
TC74VHC125FT



NJM2904V



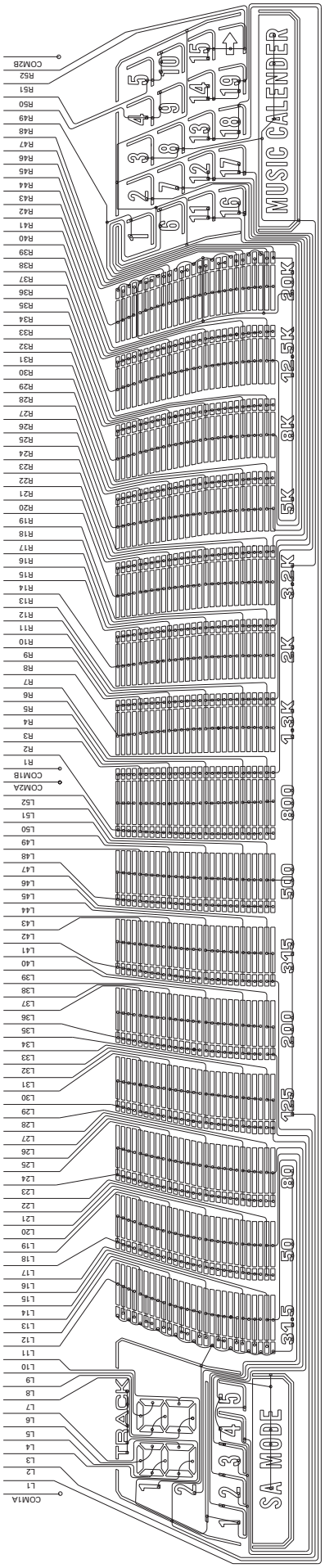
TC7SH08F



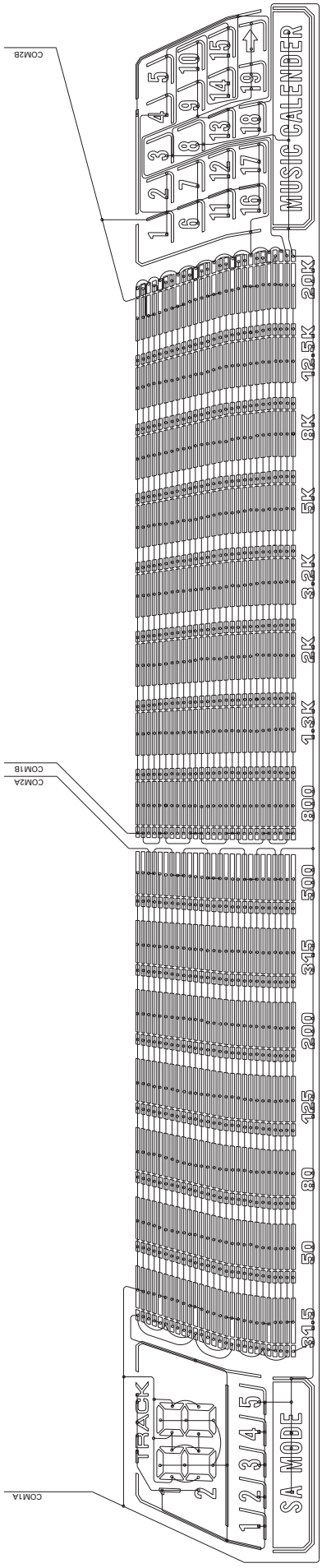
7.2.2 DISPLAY

● **CAW1534**

SEGMENT

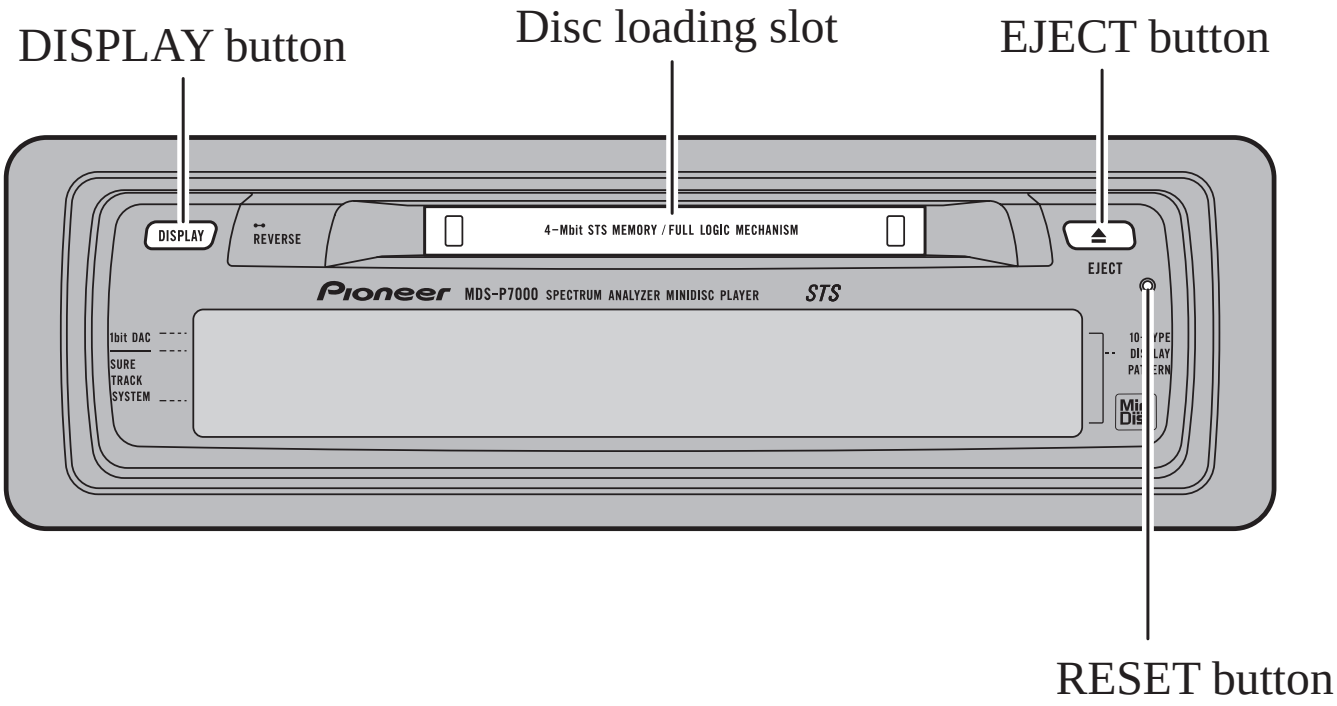


COMMON



8. OPERATIONS AND SPECIFICATIONS

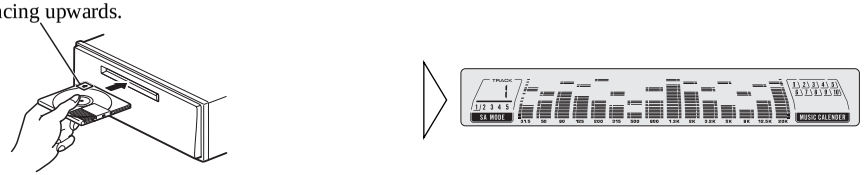
8.1 OPERATIONS



To Listen to Music on MD Player

1. Load an MD.

Load in the direction of the arrow, with the label facing upwards.



Note:

- Load an MD after confirming the MD shutter is closed. Refer to “MD Player and Care”.

2. For details concerning operation, refer to the back page of this manual.

3. Remove the disc.

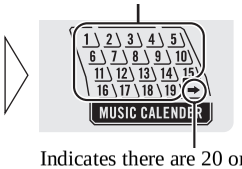
Note:

- Discs left partially inserted after ejection may incur damage or fall out.
- When you load a disc, MD player reads information recorded on the disc such as the number of tracks. While the disc is being read, “TOC READ” is indicated in the head unit display.
- If you load a disc with the arrow pointing in the wrong direction, it is automatically ejected.
- If the MD player cannot operate properly, an error message (such as “MD ERR-11”) appears on the head unit display. Refer to “MD Player Troubleshooting”.

Music Calender

Indicates the total number of tracks recorded on an MD and the number of the track currently playing.

Indications for tracks 1–19.

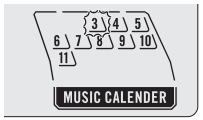


Indicates there are 20 or more tracks.

- **During normal play or Scan play.**

  The number of the track currently playing flashes.

e.g. Indicates track 3 on an MD with 11 tracks is currently playing.



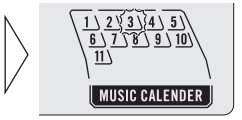
- **During Repeat play.**

  The number of the track currently being replayed flashes.

e.g. Indicates Repeat play of track 3.

- **During Random play.**

  The numbers of all the tracks on the MD light, and the number of the track currently playing flashes.

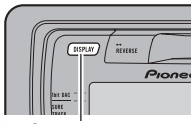


e.g. Indicates Random play of track 3.

Spectrum Analyzer Display

This product has five display patterns (Peak Bound, Symmetry, Peak Level, Radiation, Winding Road), of which you can choose one at a time.

- **Select the Spectrum Analyzer display.**



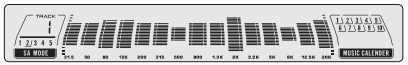
Each press
changes the Display ...

Each press of the DISPLAY button changes the display in the following order:
Peak Bound → Symmetry → Peak Level → Radiation → Winding Road

Peak Bound Display

This indicates the music energy level of each frequency by the height of the bar for each band, while also showing a temporary indication of level peaks.

Symmetry Display



This indicates the music energy level of each frequency by width.

Peak Level Display

This indicates the music energy peak level of each frequency.

Radiation Display

This indicates the music energy level by radiation display.

Winding Road Display

This displays an image giving the impression of traveling along a winding road. Speed changes depending on the music

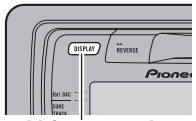
Demo Mode

When power to this product is switched ON, the spectrum analyzer shows nothing for about 20 seconds, just as if an unrecorded section on a cassette tape were playing, before the display switches to a demonstration.

Light/Dark Reverse Mode

This function reverses light and dark spectrum analyzer indications.

- **e.g. Reversed Radiation Display.**



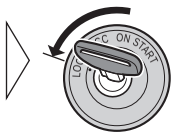
Hold for 2 seconds

Note:
- Pressing the DISPLAY button once more returns you to the regular display.

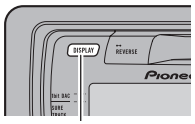
Setting the Dimmer

To enable this product's display from being too bright at night, when the vehicle's head lights are turned ON the display is dimmed. You can switch this function ON/OFF.

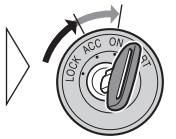
1. **Switch the car engine OFF.**



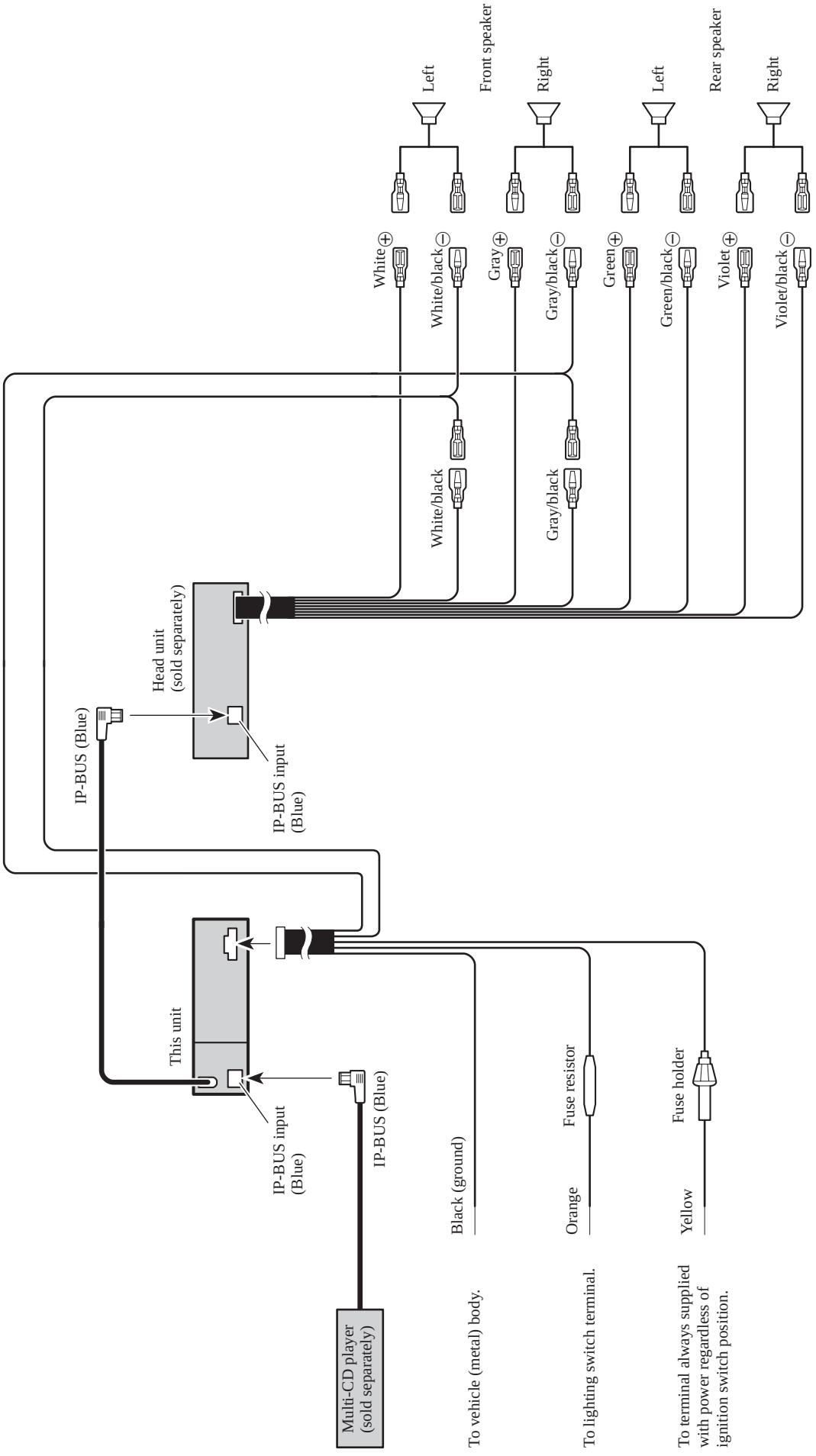
2. **While pressing the DISPLAY button, turn the ignition switch to ACC or ON.**



Leave pressed



Note:
- The dimmer setting switches ON/OFF each time you perform the above operations.
- The dimmer is initially set to ON.


Left
Front speaker
Right
Left
Rear speaker
Right
White ⊕
White/black ⊖
Gray ⊕
Gray/black ⊖
Green ⊕
Green/black ⊖
Violet ⊕
Violet/black ⊖
White/black
Gray/black
Head unit
(sold separately)
IP-BUS (Blue)
IP-BUS input
(Blue)
This unit
IP-BUS input
(Blue)
IP-BUS (Blue)
Multi-CD player
(sold separately)
Black (ground)
To vehicle (metal) body.
Fuse resistor
Orange
To lighting switch terminal.
Fuse holder
Yellow
To terminal always supplied
with power regardless of
ignition switch position.

8.2 SPECIFICATIONS

General

Power source 14.4 V DC (10.8 – 15.1 V allowable)
Grounding system ..... Negative type
Max. current consumption ..... 0.5 A
Dimensions
(DIN) (mounting size)
..... 178 (W) X 50 (H) X 150 (D) mm
[7 (W) X 2 (H) X 5-7/8 (D) in]
(nose) ..... 188 (W) X 58 (H) X 18 (D) mm
[7-3/8 (W) X 2-1/4 (H) X 3/4 (D) in]
(D) (mounting size)
..... 178 (W) X 50 (H) X 155 (D) mm
[7 (W) X 2 (H) X 6-1/8 (D) in]
(nose) ..... 170 (W) X 46 (H) X 13 (D) mm
[6-3/4 (W) X 1-3/4 (H) X 1/2 (D) in]
Weight ..... 1.0 kg (2.2 lbs)

MD player

System ..... Mini disc audio system
Usable discs ..... Mini disc
Signal format ..... Sampling frequency: 44.1 kHz
.....Number of quantizatin bits: 16; linear
Frequency characteristics ..... 20 – 20,000 Hz (±1 dB)
Signal-to-noise ratio ..... 92 dB (1 kHz) (IHF-A network)
Dynamic range ..... 91 dB (1 kHz)
Output level ..... 1 V (1 kHz, 0dB)
Number of channels ..... 2 (stereo)

Note:

- US and foreign patents licensed from Dolby Laboratories Licensing Corporation.
- Specifications and the design are subject to possible modification without notice due to improvements.